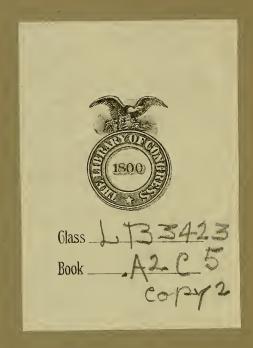
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CLARK, TALIAFERRO, SYDENSTRICKER, EDGAR,
COLLINS, SELWIND

HEIGHTS AND WEIGHTS
OF SCHOOL CHILDREN

VVASHINGTON II.



TREASURY DEPARTMENT UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, SURGEON GENERAL

HEIGHTS AND WEIGHTS OF SCHOOL CHILDREN

A STUDY OF THE HEIGHTS AND WEIGHTS OF 14,335 NATIVE WHITE SCHOOL CHILDREN IN MARYLAND, VIRGINIA, AND NORTH AND SOUTH CAROLINA

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HEIGHTS AND WEIGHTS OF SCHOOL CHILDREN.

A Study of the Heights and Weights of 14,335 Native White School Children in Maryland, Virginia, and North and South Carolina.¹

By Taliaferro Clark, Surgeon; Edgar Sydenstricker, Statistician; and Selwyn D. Collins, Assistant Statistician, United States Public Health Service.

Introductory.

A number of so-called standards of the physical development of children are in more or less general use in this country, largely for determining the state of nutrition. For the most part these standards represent averages of measurements made by different observers in widely separated communities, without reference to racial stock or geographical distribution. For purposes of comparison and in order to present anthropometrical observations for groups that are fairly homogeneous with respect to race stock and geographic location in the United States, selections of records were made from a considerably larger amount of material collected in a series of field investigations in child hygiene by Public Health Service officers during the last six years.

The present study deals with 14,335 white children of native parentage in representative localities in Maryland, Virginia, and North and South Carolina. The observations are confined to children actually attending school, ranging in age from 6 to 16 years, inclusive. While in every case a somewhat intensive physical examination (and for a considerable proportion, mental examination) was made, all children regardless of their physical or mental status, were included. The observations, therefore, may be said to be of a typical school population within the racial and geographical limits mentioned; they include the handicapped individuals, as far as handicapped individuals were found attending school, as well as the probable normal.

A considerable variety of anthropometrical records was collected for each individual in addition to records of physical defects and mental status. The present study, however, is confined to observations on standing height and weight. The presentation of the other data is reserved for later publications.

¹ From Field Investigations in Child Hygiene, United States Public Health Service, in cooperation with the Statistical Office, United States Public Health Service. Reprint from the Public Health Reports, vol. 37, No. 20, May 19, 1922, pp. 1185-1207.

SCOPE OF THE STUDY.

A statistical study of the height and weight records of the 14,335 children was made along the following lines:

- 1. A series of comparisons of the mean heights and weights at different ages for the two sexes for the purposes (a) of discovering such differences as might exist at various ages between boys and girls with respect to height, weight, and the relation of weight to height; and (b) of observing the rates of growth in these respects during the period of 6-16 years.
- 2. The degree of variation in heights and weights at each age for either sex in terms of the standard deviation and the coefficient of variability.
- 3. The degree of correlation between the heights and weights of individuals of either sex at each age, using the correlation coefficient and ratio and regression coefficient as expressions of the relation.
- 4. The construction of a table of heights and weights according to single years of age for boys and for girls of the particular racial group and geographical section selected.

The detailed data and certain statistical constants derived therefrom are presented for reference in appended tables.

GENERAL CONSIDERATIONS.

Residential distribution.—The school children here considered were from various rural districts, small towns, and cities of moderate size in the four States mentioned. Their distribution according to locality is shown in Table I.

Table I.—Distribution of 14,335 children observed for height and weight according to locality of residence.

Name of locality.	Nature of locality with approximate population of urban localities.	Number of children observed.
Frederick County, Md Petersburg, Va Hampton, Va Charlotte, N. C Spartanburg, S. C Greenville, S. C	City (45,000)	4,348 1,748 1,153 3,822 2,562 702

It is believed that these localities are fairly representative of the section included within the four States. As mentioned above, in order to exclude differences in race stock as far as possible, except in so far as native-born persons in this section are affected by them, the 14,335 individuals selected are of native-born white parentage.

Sex and age distribution.—The sex and age distribution of the children are shown in Table II.

Table II.—Distribution according to sex and age of 14,335 native white children observed for weight and height in certain localities in Maryland, Virginia, North and South Carolina.

Age at nearest birth-	Number.		Per cent.		
day (years).	Boys.	Girls.	Boys.	Girls.	
All ages	7, 132	7, 203	100.0	100.0	
<u>6</u>	380	353	5. 3	4.9	
7	745	735 854	10. 4 12. 7	10. 2 11. 9	
9	904 889	900	12.7	12. 5	
10.	973	936	13, 6	13. 0	
11	871	847	12. 2	11. 8	
12	781	805	11.0	11. 2	
13	679	695	9, 5	9, 6	
14	471	528	6.6	7.3	
15	278	331	3, 9	4.6	
16	161	219	2.3	3.0	

The age at nearest birthday is employed in this study.

The distribution according to age is quite similar for the two sexes, although, as was expected, a slight preponderance of girls is to be noted at the ages 14 to 16, inclusive, because of the greater tendency on the part of older boys to quit school.

For both sexes the numbers observed at the ages of 6 to 14, inclusive, are sufficiently large to constitute reasonably fair samples of the population of this section. Less dependence can be placed on the representativeness of the data for the ages 15 and 16 because of the relatively small numbers of children comprising these age groups. This should be borne in mind when certain irregularities appear in the analysis which seem to be peculiar to the ages named.²

I. Mean Heights and Weights.

The measurements of children considered in this study were all made by medical officers of the United States Public Health Service in the schools of the various localities included. The children were measured as they were dressed, and in shoes except when the child was attending school barefooted. Weights were taken with wraps and heavy coats removed, leaving only the ordinary indoor clothing.

The measurements are so classified that the mid-points of unit classes fall on the even inch and the even pound.

MEAN HEIGHTS AND WEIGHTS OF BOYS AND GIRLS AT DIFFERENT AGES.

The basis for the first series of comparisons is given in the table of mean (arithmetic average) heights and weights ³ (Table III).

² The probable errors of the mean heights and weights at each age are given in appendix, Table XXI.

³ The mean rather than the median or modal heights and weights have been used for the reason that the means appear to be satisfactory expressions. The modes are difficult to define in some instances because of somewhat irregular distributions due to small numbers. The medians are in all instances somewhat lower than the means, but their variations are similar in all essential respects to those of the means. (See appendix, Table XXI.) Furthermore, the means are more useful in comparing our results with those of other studies, and are more desirable in expressing degrees of dispersion and correlation.

Table III.—Mean heights and weights of 14,335 native white children in Maryland, Virginia, North and South Carolina, at each age, compared for boys and girls.

Age at nearest birth-	Height	(inches).	Weight (pounds).		
day (years).	Boys.	Girls.	Boys.	Girls.	
6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16.	45. 4 46. 8 48. 8 50. 7 52. 6 54. 3 56. 2 58. 0 60. 3 62. 9 64. 6	44. 8 46. 6 48. 5 50. 5 52. 5 54. 5 57. 0 59. 3 61. 1 62. 5 63. 3	47. 5 50. 4 54. 5 59. 6 65. 2 71. 1 78. 0 85. 1 95. 4 108. 4 116. 7	45. 5 48. 3 52. 4 58. 0 64. 0 70. 3 79. 7 89. 7 99. 4 107. 6 113. 6	

¹ Probable errors of the means are shown in appendix, Table XXI.

The differences between the means for boys and girls at a given age period are not great, but they are significant. Table IV, showing the differences, will assist in making the comparison from this point of view:

Table IV.—Comparison of the mean heights and weights (as given in Table III), showing the excess in favor of either sex at different ages.

	Excess in the mean—					
Age at nearest birth-	Heigh	nt of—	Weight of-			
day (years).	Boys over girls (inches).	Girls over boys (inches).	Boys over girls (pounds).	Girls over boys (pounds).		
6. 7. 8. 9. 10. 11. 12.	0.6 .2 .3 .2 .1	0.2	2.0 2.1 2.1 1.6 1.2 .8	1.7		
12 13 14 15 15 16	1.3	1.3	3.1	4.6 4.0		

It will be noted in the group studied that on the average at the ages of 11 to 14, school girls are taller than school boys, and that at the ages of 12 to 14 the girls are also heavier. This observation merely corroborates for the particular racial and geographic group under consideration what has been found by other observers to be uniformly true during the period of puberty.

WEIGHT-HEIGHT INDEX.

The relation of weight to height, commonly expressed in the form of the ratio of weight to height at each age and called the weightheight index, is shown in Table V.

Table V.—Weight-height indices, or the ratios of mean weight to mean height, at each age for 14,335 native white children in Maryland, Virginia, North and South Carolina, compared for boys and girls.

Age at nearest birth- day (years).	Mean weight in pounds Mean height in inches			
(3	Boys.	Girls.		
6 7 8.	1.05 1.08 1.12	1.02 1.04 1.08		
9. 10	1.18 1.24 1.31	1.15 1.22 1.29		
12	1.39 1.47 1.58 1.72	1. 40 1. 51 1. 63 1. 72		
16	1.81	1.79		

The differences in the indices for the sexes, it will be noted, occur at the same ages, approximately, as the differences in weights and heights considered separately. Computed from Table V, they are given for convenience in Table VI.

Table VI.—Comparison of the mean weight-height index (as given in Table V) showing the excess in favor of either sex at different ages.

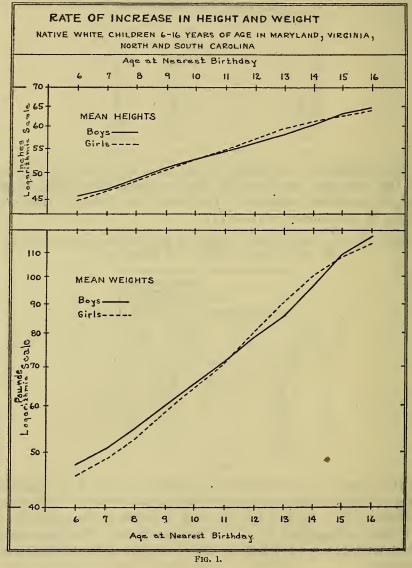
Age at nearest birthday (years.)	Excess in the mear weight-height in dex (pounds per inch of height).			
(years.)	Boys over girls.	Girls over boys.		
6	0.03 .04 .04 .03 .02			
11. 12. 13. 14. 15.	. 02	0.01 .04 .05		

Here, again, it is found that the results correspond in a general way to those of similar studies of other groups of children. The boys are heavier than the girls for each inch of height at the ages of 6 to 11, both inclusive, and at 16. At the ages 12 to 14 the girls weigh more than the boys, and at 15 no difference appears for this group of children.

RATE OF INCREASE IN HEIGHT AND WEIGHT.

The series of means given in Tables III and V suggest an interpretation from the point of view of development; and considered in this light, although constituting observations of different individuals at each age, they approximate the records of growth of the same individuals.

The rate of increase in height and weight or in the weight-height index is not easily seen from the tables of means and ratios. Per-



haps the quickest and simplest way to show it is to plot them on a logarithmic vertical scale. The means in Table III have been plotted in Figure 1.4

⁴ In constructing the vertical scales for height and weight the spacing has been so arranged as to allow approximately the same space for an inch of height as for a pound in weight. The horizontal scales correspond exactly. The slope of the four lines, therefore, is comparable.

The curves also illustrate graphically the comparison of the actual mean heights and weights of boys and girls at different ages.

If the mean heights or weights fall in an absolutely straight line on a logarithmic scale (the scale being so constructed as to give the same results had the logarithms of the means been plotted on ordinary cross-section paper), obviously the rate of increase is unchanging. There are, however, quite definite curves in the lines connecting the points, indicating as other investigators have pointed out, that the rate of increase in either height or weight varies at different ages for both boys and girls. The rate of increase in the height of boys shows a tendency to slacken between the ages of 11 and 13; and the same slackening is seen for girls, but not until the . age of 13. The mean weights of boys show an accelerating rate of increase until the age of 15, with a marked impetus at the age of 13. For girls the weight curve rises more rapidly than for boys up to the age of 13, where the slackened rate of increase begins and continues through the last year of age (16) for which data are available.

These variations in the rate of increase are expressed numerically in Table VII.

Table VII.—Percentages of annual increase in mean height and mean weight of 14,335 native white children in Maryland, Virginia, North and South Carolina, compared for boys and girls.

	Percentage increase in—				
Age period.	Height.		Wei	ght.	
	Boys.	Girls.	Boys.	Girls.	
6 to 7 ¹ 7 to 8 8 to 9 9 to 10 10 to 11 11 to 12 12 to 13 13 to 14 14 to 15 15 to 16	4. 0 3. 9 3. 9 3. 8 3. 1 3. 4 4. 0 4. 7 3. 0	4. 1 3. 9 4. 4 3. 8 3. 9 5. 2 4. 2 2. 9 2. 0 1. 5	6. 1 8. 1 9. 4 9. 4 9. 0 9. 7 9. 1 12. 1 13. 6 7. 7	6. 2 8. 5 10. 7 10. 3 9. 8 13. 4 12. 5 10. 8 8. 2 5. 6	

¹ All ages are those at nearest birthday.

The relatively faster increase in weight than in height suggests, of course, that the weight-height index increases as children grow older. The curves constructed by plotting the weight-height indices in Table V on a logarithmic scale are shown in Figure 2.

Beginning at about 8 years of age the rate of increase in the weight-height index is markedly slower for boys than for girls up to the age of 13 or 14. Thereafter the opposite is true.

The means given in Table V may be used in still another way in considering the question of growth in weight in relation to height.

If the annual increment in weight be divided by the annual increment in height for the corresponding year of age, we will obtain a series of figures showing the annual increase in weight per each inch of increase in height. Table VIII presents the annual increments computed from the means given in Table III and the ratios found in the manner suggested.

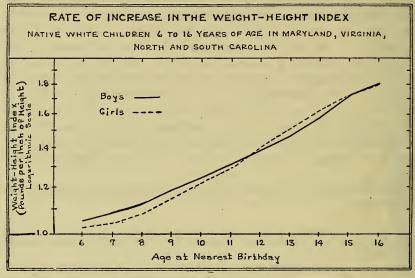


Fig. 2.

Table VIII.—Annual increments in pounds of weight for each inch of increment in height computed from mean weights and heights of 14,335 native white children in Maryland, Virginia, North Carolina, and South Carolina, compared for boys and girls.

	Annual increment.				Annual increment in weight			
Age period.	For boys.		For boys. For girls.		(pound inch of in heigh	s) for each increment at.		
	In height (inches).	In weight (pounds)	Inheight (inches).	In weight (pounds).	Boys.	Girls.		
6 to 7 ¹ 7 to 8 8 to 9 9 to 10 10 to 11 11 to 12 12 to 13 13 to 14 14 to 15 15 to 16	1. 4 2. 0 1. 9 1. 9 1. 7 1. 9 1. 8 2. 3 2. 6 1. 7	2. 9 4. 1 5. 1 5. 6 5. 9 6. 9 7. 1 10. 3 13. 0 8. 3	1. 8 1. 9 2. 0 2. 0 2. 5 2. 3 1. 8 1. 4	2.8 4.1 5.6 6.0 6.3 9.4 10.0 9.7 8.2 6.0	2.1 2.7 2.7 2.9 3.6 3.9 4.5 5.0 4.9	1. 6 2. 2 2. 8 3. 0 3. 2 3. 8 4. 3 5. 4 5. 9 7. 5		

¹ All ages are those at nearest birthday.

The ratios in the two last columns, when considered as two series, merely indicate in another way the differences in the direction of growth of boys and girls. They have been plotted on a logarithmic scale in Figure 3.

The gain in weight by girls for each inch of gain in height increases at an almost constant rate from 7 to 16 years. Allowing for certain irregularities in the data, the gain in weight by boys for each inch of gain in height is practically the same as that by girls up to the age of 11, and thereafter is at a considerably slower rate.

COMPARISON OF MEASUREMENTS OF INDIVIDUALS OF DIFFERENT AGES WITH PERIODIC MEASUREMENTS OF A SINGLE GROUP OF INDIVIDUALS.

A number of observers have objected to height and weight standards based on measurements of children taken in cross section, at

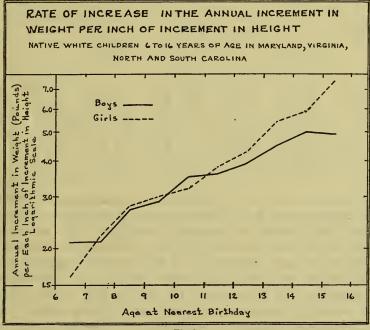


Fig. 3.

different age periods, on the ground that such measurements do not furnish an accurate index of the rate of growth. It has been suggested that such an index can be determined with appreciable accuracy only by making periodic measurements of the same children over a number of years. On the other hand, an index determined by periodic measurements requires time, while the need for fairly reliable standards by which to gauge the state of nutrition is pressingly present. Furthermore, such a group of children, of necessity, will be a selected group which finally, through process of elimination, is likely to be composed of a relatively small number of the surviving fittest who are benefited by special contact with health educational methods. There is the danger, therefore, that the end results will not be applicable for comparison with children not subjected to special influences, and with children of other sections of the country.

Although the measurements made by the United States Public Health Service constitute observations of different groups of individuals at each age, they may be compared with successive observations of a single group of individuals. Using the records recently published by Prof. B. T. Baldwin, the following comparison is afforded.⁵

Table VIII-A.—Mean heights, mean weights, and mean weight-height indices of children of different ages measured by the United States Public Health Service, compared with corresponding measurements made periodically on a single group of children by Dr. B. T. Baldwin.

	Н	leight (inches).		· V	Veight (pounds).		Wei		ight inde	ex
Age at nearest birthday.	Boy	s.	Girl	ls.	Воу	78.	Gir	1 s.	Воу	rs.	Gir]	ls.
	U. S. P. H. S.	Bald- win.	U. S. P.H.S.	Bald- win,	U. S. P. H. S.	Bald- win.	U. S. P. H. S.	Bald- win,	U. S. P. H. S.	Bald- win.	U. S. P.H.S.	Bald- win,
6	45. 4 46. 8 48. 8 50. 7 52. 6 54. 3 56. 2 58. 0 60. 3 62. 9 64. 6	45. 4 47. 8 49. 8 51. 5 53. 5 55. 3 56. 9 59. 3 61. 8 64. 1 66. 7	44.8 46.6 48.5 50.5 52.5 54.5 57.0 59.3 61.1 62.5 63.3	44. 3 46. 3 49. 1 51. 1 53. 1 55. 3 57. 6 60. 1 61. 8 62. 7 63. 6	47. 5 50. 4 54. 5 59. 6 65. 2 71. 1 78. 0 85. 1 95. 4 108. 4 116. 7	45. 2 50. 6 55. 3 60. 7 67. 2 73. 1 77. 7 88. 4 98. 3 109. 4 120. 6	45. 5 48. 3 52. 4 58. 0 64. 0 70. 3 79. 7 89. 7 99. 4 107. 6 113. 6	42.6 48.0 53.8 59.7 67.2 74.1 83.9 96.2 107.2 115.5 120.6	1.05 1.08 1.12 1.18 1.24 1.31 1.39 1.47 1.58 1.72	0.99 1.05 1.11 1.17 1.25 1.32 1.36 1.49 1.59 1.70 1.80	1.02 1.04 1.08 1.15 1.22 1.29 1.40 1.51 1.63 1.72 1.79	0.96 1.02 1.09 1.16 1.26 1.33 1.45 1.60 1.73 1.84 1.89

In the case of the boys, the height and weight curves follow the same general trend, with Baldwin's group slightly above that of the Public Health Service at practically every age. The weight-height indices for the two groups of boys are practically the same at each age except 6 years. In the case of the girls, the heights of the two groups follow much the same course, with a slight convergence of the curves at the older ages. The weight and the weight-height index curves for the girls show a tendency to diverge after 7 years of age, and the divergence is considerable by the age of 16. Some factor evidently influenced the growth of the girls measured periodically which failed to influence the girls measured by the United States Public Health Service. Otherwise the curves appear to be as similar as could be expected.

II. Difference in Heights and Weights of Children of the Same Sex and Age.

Thus far comparisons in this study have been made of average (mean) heights and weights, but at each age children differ considerably in these respects and the differences are greater at some ages than at others. The averages which have been studied do not take into account these differences because the average (arithmetic

⁵ Physical Growth of Children from Birth to Maturity. By Bird T. Baldwin, University of Iowa Studies in Child Welfare, 1921. Baldwin's figures are based on semiannual measurements of an average of 125 boys and 125 girls from the Horace Mann School, Teachers' College, Columbia University, New York, for periods of 8 years or more. (P. 411.)

mean) does not show for any group of children the range of weights or heights, or the "dispersion" of weights or heights above and below the average.

The nature of these differences is shown by plotting the number of children at each height or weight. As in all biometrical distributions of this character, the distribution will be found to form a

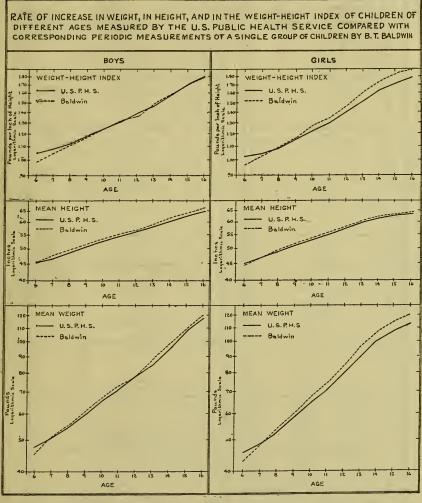


Fig. 3a.

more or less symmetrical frequency curve, which means that most of the children will tend to fall within rather narrow height or weight limits and fewer and fewer will fall in the classes toward either extreme. In plotting Figure 4, the percentages at each height or weight interval are used so as to reduce the data for the different ages to the same basis vertically.

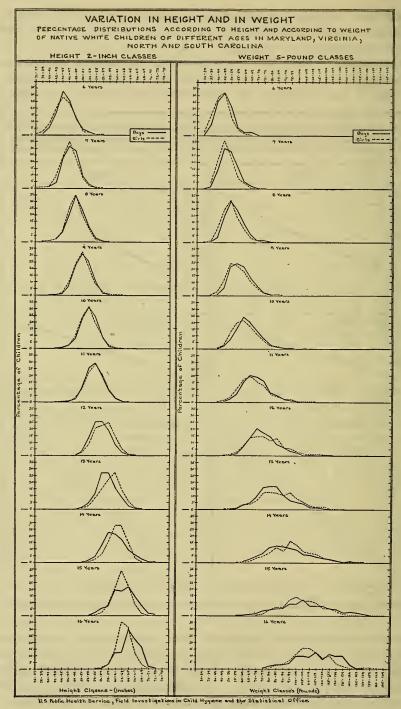


Fig. 4.

The differences in the *shape* of the curves for heights as well as for weights are quite marked when ages are compared. In general, the older the age, the flatter is the curve and hence the greater the dispersion. This means that children of a given age differ more widely in height or weight as they grow older. This statement should be qualified, however, for a closer study of the graphs affords the suggestion that the greatest dispersion or difference occurs at the age of puberty. Differences of this character are exhibited by both boys and girls.

STANDARD DEVIATION IN HEIGHTS AND WEIGHTS.

A more nearly exact expression of these differences than that afforded by the graphic method is necessary. The usual statistical term used to express the degree of differences in distribution is the standard deviation (σ) , which, in turn, is expressed by (V) the coefficient of variability as a percentage of the mean. As the σ or the V is large or small, so the differences in the individual heights or weights are large or small.

In Table IX are given the standard deviations in heights and weights at each age for boys and girls and the corresponding coefficients of variability.

Table IX.—Variation in heights and weights of boys and girls of the same age.

As expressed in standard deviations in standing heights and weights at each age of 14,335 native white children in Maryland, Virginia, North and South Carolina, and the corresponding coefficients of variability.

Age at nearest birthday.	Standard	deviation.	Coefficient of variability.		
birthday.	Boys.	Girls.	Boys.	Girls.	
		STANDING H	EIGHTS.		
6	2.77±0.068 2.58±.045 2.54±.040 2.66±.043 2.64±.040 2.82±.046 3.03±.052 2.93±.054 3.83±.084 3.55±.110 2.99±.112	$\begin{array}{c} 3.21\pm0.081\\ 2.53\pm.044\\ 2.47\pm.040\\ 2.69\pm.043\\ 2.83\pm.044\\ 3.00\pm.049\\ 3.02\pm.051\\ 3.16\pm.057\\ 2.99\pm.062\\ 2.62\pm.069\\ 2.50\pm.081\\ \end{array}$	6. 10 5. 51 5. 20 5. 25 5. 02 5. 19 5. 39 5. 05 6. 35 6. 12 4. 63	7. 17 5. 43 5. 09 5. 33 5. 39 5. 50 5. 30 5. 33 4. 89 4. 19 3. 95	
		WEIGHT	S.		
6	7. 76±0.190 6.56±.115 7. 13±.113 7. 98±.128 9.09±.139 10.30±.166 12.43±.212 12.84±.235 17.52±.385 20.46±.585	7. 27±0. 185 6. 26± . 110 7. 39± . 121 9. 24± . 147 10. 79± . 168 12. 87± . 211 14. 85± . 250 16. 41± . 297 14. 75± . 306 16. 38± . 429 16. 24± . 523	16, 34 13, 02 13, 08 13, 39 13, 94 14, 49 15, 94 15, 09 18, 36 18, 87 14, 67	15. 98 12. 96 14. 10 15. 93 16. 86 18. 31 18. 63 18. 29 14. 84 15. 22 14. 26	

The coefficient of variability is, of course, the best expression of the degree of variation, since it takes into account the size of the mean from which the deviations are measured. As the table and the graph (Fig. 6) clearly show, there are marked differences in this coefficient for weight at different ages for the same sex and, when the sexes are compared, for the same age. After the age of 7 the variation of weight increases with age up to 13 years for girls and 15 years for boys, and then decreases, the decrease thus beginning at an earlier age for girls than for boys.

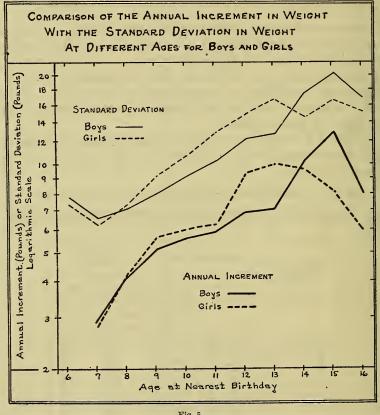


Fig. 5.

RATE OF GROWTH AND VARIATION IN WEIGHT.

It is of interest to inquire the reasons for the greater variation in weight at certain ages. While it might be due in part to a greater percentage of abnormal children at certain ages who may vary more from the mean than the normal children, the rapidity of growth as expressed by the mean annual increment in weight is definitely associated with variation in weight, as shown in Figure 5.

A comparison of the mean annual increment (see Table VIII) with the standard deviation (see Table IX) for the same sex shows this correlation in a more striking manner. The variation in weight seems to increase or decrease with the mean annual increment. That is to say, children vary most in weight at the periods of the most rapid increase in weight.

These differences from the point of view of sex are also striking. The degree of variation in weight for boys and girls of the same age

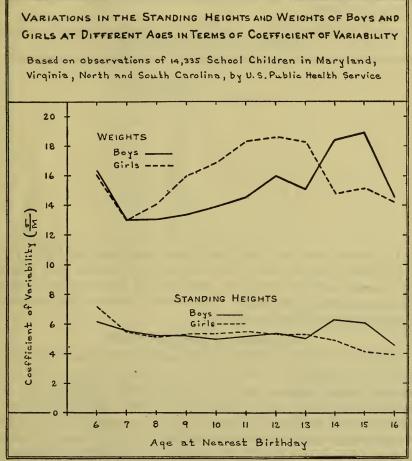


Fig. 6.

is by no means the same as the standard deviations (see Table IX and Figure 5, upper curves) clearly indicate. The same sort of differences between the sexes is shown when the annual increment in pounds is compared. (See Table VIII and Figure 5, lower curves.)

RELATION OF HEIGHT TO VARIATIONS IN WEIGHT.

In comparing the degree of variation in weights for boys and girls the factor of height must also be considered. The degree of variation

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as expressed by the coefficient of variability is plotted for weights and heights for either sex in Figure 6.

Since the two sets of curves are quite different in some respects, an attempt has been made to see what the coefficients of variability in weight would be if no variation in heights had existed. This has been done by a method of averaging the coefficients of variability in weight for children of a given age at each inch of height, a method which is admittedly somewhat crude but accurate enough for the purpose in view.⁶

 $\begin{array}{lll} {\rm T_{ABLE}~X.--Variation~in~weights~of~boys~and~girls~of~the~same~age,~after~eliminating} \\ & (roughly)~the~effect~of~variation~in~height. \end{array}$

As expressed by the weighted averages of the coefficients of variability for weight at each inch of height.

Age at nearest birth-	Averages of the coefficients of variability.			
•	Boys.	Girls.		
6	8, 48 9, 06 8, 99 8, 65 9, 49 9, 95 10, 28 10, 40 10, 51 9, 66 9, 04	8, 55 8, 39 8, 73 10, 74 11, 25 12, 01 12, 15 12, 60 13, 30 12, 68 11, 50		

The results given in Table X are shown graphically in Figure 7. It appears that girls over 8 years of age vary with respect to weight in a considerably greater degree than boys of the same age and of the same approximate height. The degree of variation is somewhat more pronounced after the age of 13.

III. Correlation of Height and Weight.

Thus far the children of given age and sex have been considered from two standpoints: First, as constituting groups, using the average (mean) heights and weights of different sex-age groups for making comparisons; and, second, as individuals, using the standard deviation and coefficient of variability as measures of variation for determining the degree individual children differ in respect of height and weight. It now remains to consider the differences occurring in individual children in each group from the point of view of the relation of variation in height to variation in weight. That is, how closely do variations in height correspond to variations in weight among children of different ages and sexes? Obviously, if there is a very close relationship, there must be a marked uniformity in the

⁶ See appendix, Tables XV and XVI, for the coefficients of variability at each height. The coefficients of variability in weight of children of a given age increase little, if any, with increase in height. It therefore seemed feasible to average these coefficients for a given age group in order to get an expression of the average relative variation in weight of children of any given height for that age.

weight of children, taking height into account; if there is not a very marked relationship, children of a given height, age, and sex will differ widely in weight. The importance of this phase of the discussion does not lie so much in demonstrating the fact that a relationship of this kind exists, since in the very nature of things it must exist, as in discovering the differences in degree of correlation for the various sex and age groups.

COEFFICIENT OF CORRELATION.

A comparison of this kind would be a very detailed and difficult task if no single measure of the relationship between the degree of

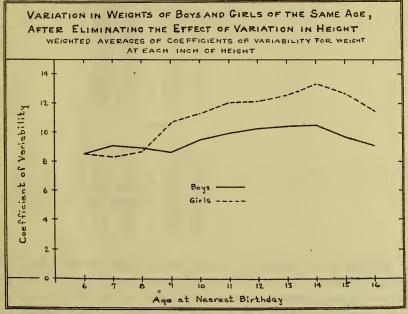


Fig. 7.

the two variations could be used. Such a statistical measure exists in the coefficient of correlation and the correlation ratio. When this coefficient or ratio is zero there is no relationship whatsoever. When it is 1, or unity, the relationship is perfect; that is, the variation in one (e. g., height) is accompanied by exactly the same variation, relatively, in the other (e. g., weight). The nearer unity, the closer the relationship between the two variables.

⁷ The coefficient of correlation (r) is the generally used statistical measure of linear or straight line correlation between two variables. If the items (individuals) are plotted with heights as ordinates and weights as abscisse, and the points (or the means of the weights at the different heights) tend to fall along a straight line, the correlation is said to be linear. But if the points tend to fall along a curved line, the correlation is said to be nonlinear and, under certain conditions, the correlation ratio (η) is a better measure of the correlation between the two variables. If the ratio (η) is significantly larger than the coefficient (r), it is an indication of nonlinearity.

In the case of the heights and weights of children in this study, the differences between the correlation ratio and the coefficient are not marked except at a few ages, but in practically every instance they are found to be significant if Blakeman's criterion of nonlinearity is applied. That is, the correlation ratio is a more nearly accurate expression of correlation than the coefficient for the material used in this study.

The correlation ratios as well as the coefficients of correlation for heights and weights of boys and girls at each age are given in Table XI, together with their probable errors. The correlation tables are given in the appendix.

Table XI.—Correlation of standing heights and weights of native white children in Maryland, Virginia, North and South Carolina.

Age at nearest birth- day.	Correlation ratio of weight on height (η).	Coefficient of correlation (r).	
	во	YS.	
6	$\begin{array}{c} 0.830 \pm 0.0108 \\ .704 \pm .0125 \\ .718 \pm .0109 \\ .744 \pm .0101 \\ .720 \pm .0104 \\ .726 \pm .0108 \\ .736 \pm .0111 \\ .720 \pm .0125 \\ .816 \pm .0104 \\ .853 \pm .0110 \\ .784 \pm .0225 \end{array}$	$\begin{array}{c} 0.782\pm0.0134\\ .603\pm.0157\\ .682\pm.0120\\ .643\pm.0133\\ .693\pm.0113\\ .657\pm.0130\\ .706\pm.0121\\ .687\pm.0137\\ .795\pm.0114\\ .842\pm.0118\\ .736\pm.0244 \end{array}$	
	GIRLS.		
6	0.788±0.0136 .725± .0118 .751± .0101 .724± .0107 .709± .0110 .695± .0120 .719± .0115 .707± .0128 .692± .0153 .543± .0262 .592± .0296	$\begin{array}{c} 0.675\pm0.0195 \\ .679\pm.0134 \\ .719\pm.0111 \\ .661\pm.0127 \\ .660\pm.0125 \\ .647\pm.0135 \\ .703\pm.0120 \\ .669\pm.0121 \\ .434\pm.0172 \\ .427\pm.0303 \\ .565\pm.0310 \\ \end{array}$	

As may be expected, in all instances the correlation is high and, from the point of view of the probable error, significant. The degree of correlation, however, varies considerably in the different ages and as between boys and girls. These differences are not merely accidental, but indicate definite trends. In order to visualize the differences the correlation ratios have been plotted in Figure 8.

The correlation of height and weight is quite high at 6 years of age for both boys and girls in this particular group of children. From 7 to 13 years of age the correlation for both sexes is lower and similar, although that for the girls is slightly lower after 8 years than for boys. After the age of 13 there is a marked divergence, the correlation for boys being quite high and that for girls relatively low.

Stated in other words, the weights of both boys and girls vary in pretty much the same way as do the heights in the ages under the age of 14, the taller the children the more they weigh according to a fairly constant ratio; but in the ages 14 to 16, height or weight appear to be affected to a markedly greater extent by some other factor or factors.

VARIATION IN WEIGHT PER INCH OF VARIATION IN HEIGHT.

This may be expressed more exactly by stating the variation in weight (pounds) per inch of variation in height at each age, as shown in Table XII, and graphically in Figure 9.8

Table XII.—Variation in weight (pounds) per inch of variation in height compared for boys and girls at different ages.

Coefficient of regression of weight on height of native white children of Maryland, Virginia, North and South Carolina by sex and age.

Age at nearest birth-	Coefficient of regression of weight (height (pounds).					
	Boys.	Girls.				
6	2. 19 1. 53 1. 91 1. 92 2. 38 2. 41 2. 91 3. 02 3. 66 4. 46 4. 24	1. 52 1. 68 2. 15 2. 27 2. 52 2. 79 3. 44 3. 48 3. 16 2. 69 3. 70				

From 7 to 13 years, inclusive, the variation in weight per inch of variation in height was less among boys than girls; at 6, 14, 15, and 16 years of age the opposite was true.

IV. Summary.

- 1. The basis of this study consists of height and weight measurements of 14,335 native white school children from 6 to 16 years of age made by officers of the United States Public Health Service in representative localities of Maryland, Virginia, and North and South Carolina.
- 2. The mean heights of the girls 11 to 14 years of age, inclusive, and the mean weights of the girls 12 to 14 years, inclusive, are greater than those of the boys of the same ages. At the other ages studied the boys are taller and heavier than the girls. The weightheight index (weight per inch of height) of the girls exceeds that of the boys from 12 to 14 years and is equal at 15 years; at the other ages studied, it is greater for boys than for girls.
- 3. The annual increment in weight of the girls exceeds that of the boys from 8 to 13 years, inclusive. At the other ages studied it is greater for boys. However, when the annual increment in weight

⁸ The coefficient of regression of weight on height (computed from the coefficient of correlation (7) for a given age indicates the *average* difference in weight (pounds) per inch of difference in height.

per inch of increment in height is considered, it is found greater for girls than boys at every age after 6, except 10 years.

4. Variations in height and in weight differ markedly for different sex-age groups and are closely associated with the rate of increase in weight. When variation in weight is considered independently of variation in height, the boys 14 to 16 years of age vary considerably more in weight than the girls of the same age. But when the effect of variation in height is eliminated, the girls vary more in weight than the boys of the same age at all ages above 8 years. In other

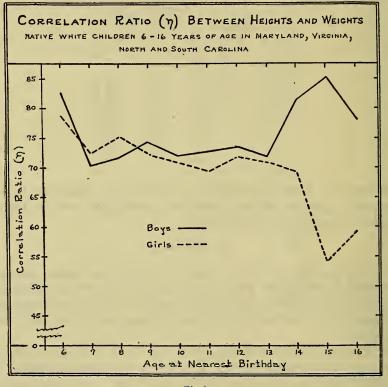


Fig. 8.

words, girls after 8 years of age vary more in weight than boys of the same age and height.

5. Correlation between heights and weights was found to be lower for the girls than for the boys at all ages above 8 years and markedly lower after 13 years of age.

V. Height-Weight Tables.

Since it appears that variability in weight differs with sex, age, and height, it seems that averages which best represent a group of children are those which take all of these factors into account. It there-

fore seemed best to present the final results of the study as average weights of boys and girls of each age, by height groups. A series of mean weights was therefore computed independently for children at each year of age and at each inch of height. In order to approximate the true average weights which would be the result of measuring an infinite number of children, it was necessary to smooth the weights computed independently. Smoothed averages were derived from data shown in the tables in the appendix, by a formula from the

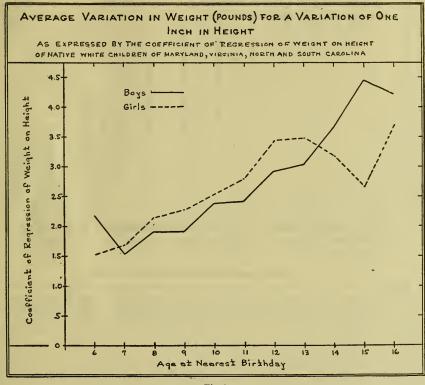


Fig. 9.

method of least squares, which give a series of weights representing the most probable smooth curve which could be constructed from the data.¹⁰ The smoothed averages are shown in Tables XIII and XIV.

⁹ The actual average weights, the standard deviations, and the coefficients of variability are given by single-year age groups and single inch-height classes in appendix Tables XV and XVI. The number of children whose measurements were considered in making up each average is also shown.

¹⁰ Let Y= weight and X= height; then it was assumed that at any given height, X, Y=a+bx+ cx^2 + dx^3 . The coefficients a, b, c, and d were evaluated by the method of least squares for each sex and age, and the smoothed weights were computed by substituting in the original equation.

Table XIII.—Smoothed average weights for each inch of height of native white schoolboys in Maryland, Virginia, and North and South Carolina, ages 6 to 16 years, inclusive, for each year of age.

Height,			Weig	ht, neare	est pound	l at each	age, nea	rest birt	hday.		
nearest inch.	6 years.	years.	years.	9 years.	10 years.	years.	12 years.	13 years.	14 years.	15 years.	16 years.
41 42 43 44	39 41 43 44	43 44	47								-
45. 46. 47. 48. 49. 50.	46 48 50 52 54	46 48 50 52 54 56 59	48 49 50 52 54 56 59 61 64 67		·		65 67 67 71 74 76 80 83 86 89 92	67 69 72 75 78 81 85 88 91 99	75 77 80 83 86 90 93 97 102	90 95 100 104	104
63 64 65								103 107	106 111 116 121	109 113 118 124	109 114 118 124
67 68										130	130 136

Table XIV.—Smoothed average weights for each inch of height of native white schoolgirls in Maryland, Virginia, and North and South Carolina, ages 6 to 16 years, inclusive, for each year of age.

sive, jor	caen ge	ur of ag	,								
Height,			Weig	ht, near	est pound	d at each	age, nea	rest birt	hday.		
nearest inch.	years.	7 years.	8 years.	9 years.	10 years.	11 years.	12 years.	13 years.	14 years.	15 years.	16 years.
39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62.	49 51 53					52 55 58 60 63 65 68 71 77 81 86 90	62 64 66 69 72 75 79 83 87 90 94	69 70 73 76 79 83 88 92 96 100	81 84 87 91 95 99 103	89 92 95 99 102 105	103 106 109
63							101	104 108	107 110	108 112	112 115
65 66 67								110	114 116	115 119 122	119 125

No attempt was made to carry the smoothed mean weight series to the extreme limits of heights. In the first place reliable averages could not be computed because of the relatively small number of children observed. In the second place averages would probably not be good criteria of the correct weights of extremely short or extremely tall children, inasmuch as those who vary so widely in height from the mean could not be assumed to conform to any computed or assumed mean weights. It is not claimed, however, that this table reaches the limits of normality, especially in the older ages; but it appeared better to keep within safe limits where the data could be relied upon than to try to make a complete table if it were necessary to use unreliable figures for the extremes.

It is suggested that this table, which is based on measurements of native white children in four representative Southern States, might serve as a table of correct weights among such children of the South. The usual tables of this sort are based on measurements of children of various racial stocks or distinctly selected groups of children, and it would seem that a table, based on measurements of children of a single race stock from one section of the country, would better represent the white children of that section. It should be borne in mind, however, that the older ages, particularly the 16-year-old boys, probably are not representative, because of the small number considered and selection due to children dropping out of school.

VI. Appendix.

TABLES OF BASIC DATA.

In the following pages are given tables containing the basic data for the study. Tables XV and XVI show by sex, age, and height the mean weights, standard deviations, and coefficients of variability. These tables contain the basic data from which Tables XIII and XIV were computed. Tables XVII to XX, inclusive, show by sex and age the percentage distribution of children according to height by 1-inch classes, and according to weight by 5-pound classes. Table XXI shows the mean heights and weights with their probable errors and the median and quartile heights and weights by sex and age. Tables XXII to XXXII, inclusive, show the original data in correlation tables.

Table XV.—Numbers, mean weights, standard deviations, and coefficients of variability in weight of native white children of Maryland, Virginia, North Carolina, by sex, age, and height.

All heights. 26 27 28 28 29 3333333 38238 34484 44484 Height nearest inch. Coefficient of varia-bility. 15.11 6.67 3.67 'spanod 11 years. deviation, Standard :0 00000 Mean weight, pounds. 82. 75. 54. 59. 59. ---Number of children, Coefficient of varia-bility. :888 8 5 8 8 3.74 .sbmoq 10 years. deviation, Standard 0 45.0 50.2 51.6 55.1 0 0 Mean weight, pounds. 65. 65. 45. 37 8624 Number of children. Ooefficient of y. 8884 of varia-4.37 ·spunod 9 years. Standard 63.0 48.0 63.0 44.0 46.5 52.1 54.3 54.3 Mean weight, pounds. 688 ×24888 Number of children. BOYS. Coefficient of varia-bility. 9.87 7.87 9.56 9.95 82 3.93 3.93 5.47 4.47 ·spunod 8 years. Standard deviation, 90001 52.0 51.0 446.3 47.4 Mean weight, pounds. 54. 52.55 187621 485128 5252 Number of children. 8.30 8.34 8.34 0338867 Coefficient of varia-bility. 9.6.0.89 5.45 5.45 5.49 5.00 5.00 ·spunod 3.26 7 years. Standard deviation, 0 60.0 48.0 10 39.9 37.0 42.3 45.2 06791 Mean weight, pounds. 57. :: 46. 50. 51. :07 618318 22222 Number of children. 8.21 7.45 9.98 Coefficient of bility. 2881 6.2.80 8248 3.75 3.94 5.58 5.58 *spunod 6 years. യ.യ.യ. 4i deviation, Standard 43.0 45.1 45.1 45.7 47.6 49.8 52.6 55.9 0 47.5 Mean weight, pounds. 36. 380 6386175 120 380 12 Number of children. Height, nearest inch. All heights. 26. 27. 28. 334 333333 38833

82223	55 56 57 58 59	82222	65 66 67 68	69 72 72	
9.53 7.61 10.86 9.79 10.18	9.31 10.03 9.26 11.82 11.20	11.49			
5.52 4.65 7.09 6.50	6.77 7.51 7.36 9.79 9.32	10.01			
57.9 61.1 65.3 66.4	72.7 74.9 79.5 82.8 83.2	87.1 96.8 79.0 75.3	74.0		
31 56 97 128 140	117 19 79 49 89	152221			-
9.16 9.03 10.25 8.02 10.50	9.64 9.73 10.31				_
5.35 6.56 7.16	6.90 7.25 8.03				_
58. 60.74 66.5 68.2	71.6 74.5 77.9 76.7	79.0 95.0 72.5			_
78 140 156 154 141	90 58 31 9	2 12			-
8.36 7.95 10.13 8.26 9.75	8.90				_
4. 78 4. 76 6. 33 5. 40 6. 65	6.38				
57. 2 59. 9 62. 5 65. 4	1.57.1.87.	47.			_
137 140 127 95 63	31 31 5				_
7. 62 10. 10 8. 91 9. 92					
6.45 6.45 8.45					
56.8 57.9 61.2 64.6	74.0 62.0 60.5 72.0				_
1113	2 ×000	- : : : : : : : : : : : : : : : : : : :			
6. 80 12. 54 9. 05					
3.91 7.35 5.42					
57.5 58.6 59.9	56.0	53.0			
162		-			
9.35.5 3.7.9 3.7.9 5.7.9		93.0			
0 r m m		-			
50 51 52	54 55 57 57	58. 60. 61.	£ 5 5 9 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	69 69 70	72.

Table XV.—Numbers, mean weights, standard deviations, and coefficients of variability in weight of native white children of Maryland, Virginia, North Carolina, and South Carolina, by sex, age, and height—Continued.

BOYS-Continued.

	Height, nearest inch.	All heights. 26 27 28 28	88888	38338	######################################	44 44 44 44 44 44 44 44 44 44 44 44 44
	Coefficient of varia-					
ears.	Standard deviation, pounds.					
16 years.	Mean weight, pounds.	116.7				
	Number of children,	161				
	Coefficient of varia- bility.					
ears.	Standard deviation, pounds.					
15 years.	Mean weight, pounds.	108.4			42.0	
	Number of children.	278			1	
	Coefficient of varia-					
ears.	Standard deviation, pounds,					
14 years.	Mean weight, pounds.	95.4		39.0		73.0
	Number of children.	471		: :		
	Coefficient of varia- bility.					
13 years.	Standard deviation, pounds.					
13 y	Mean weight, pounds.	85.1				81.0
	Number of children.	629				
	Coefficient of varia-					
ears.	Standard deviation, pounds.					
12 years.	Mean weight, pounds.	78.0			70.0	55.5 79.0
	Number of children.	781			1	3 1 2
	Height, nearest inch.	All heights 26 27 28 29	30. 31. 32. 33.	35. 36. 37. 39.	40. 41. 43. 44.	45 46 47 48 49

			٠	
		11.50	8.04 7.98 7.98 9.50	
		12.05 12.88	9.41 8.70 9.86 13.03	
	103. 0 79. 0 83. 0 85. 0	103. 2 98. 0 104. 9 104. 8 116. 9	117.0, 124.3, 123.6 137.2	138.0
	1 22 1	11. 821.22	26 18 19 19	1. 2
	9.50	8. 13 8. 45 8. 51 9. 58	10. 22 9. 72 10. 90 5. 58	
	8. 52	7. 76 13. 58 9. 00 9. 00 10. 81	12. 23 12. 09 14. 10 7. 42	
55.0	70.5 79.6 80.0 80.4 89.7	95.5 99.7 106.5 105.8 112.8	119.7 124.4 129.4 133.0 130.3	138. 2
1 2	40 9 8 10 8 10	28828	20 20 15 6	ic 63
	11. 20 10. 83 11. 82 11. 82 11. 19	9. 44 9. 11 12. 13 11. 62 7. 06	s. 09 16. 89	
	8.65 8.71 9.86 7.81 10.04	8. 74 8. 86 12. 55 12. 54 7. 51	9.48	
69.3 68.5 67.0	83.4 4.4 89.7 7.08	92.6 97.3 103.5 107.9 106.3	117. 2 121. 5 117. 1 122. 8 124. 0	143.0
440	14 23 47 47	73 4 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	20 20 1	1 2
15.46 10.46 11.87	9. 13 10. 88 10. 73 10. 50 9. 71	10.54 9.30 11.14 8.33 10.63		
10. 19 7. 05 8. 75	9.00.00.00.00 8.00.00.00 9.00 9.00.00 9.0	9. 61 8. 82 11. 04 8. 69 10. 76		
77. 0 67. 0 65. 9 67. 4 73. 7	74.8 78.4 82.1 84.0 87.4	91. 2 94. 8 99. 1 104. 3 101. 2	113. 3 123. 0 100. 0	115.0
26 17 26	28 101 gs	26 35 11	9 1 1	1
8.08 8.09 8.08	8.88 9.82 11.29 10.77	9, 60		
9.86 6.19 5.72	6. 49 7. 62 9. 01 8. 81 12. 23	8. 40 10. 53 13. 18		
64.8 65.4 66.4 70.8	73. 1 77. 6 79. 8 81. 8 87. 0	87.5 92.8 100.3 105.2 106.5	118.7 115.0 96.0	
98 41 20 8 9 41 20 8	108 1112 87 77 77	8889	т	
50 51 52 53 53 54	55. 56. 57. 59.	60 61 62 63 63	65. 66. 67. 69.	70. 71.

Table XVI.—Numbers, mean weights, standard deviations, and coefficients of variability in weight of native white children of Maryland, Virginia, North Carolina, by sex, age, and height.

GIRLS

		Height, nearest inch.	All beights. 28.27 28.28 28.38
		Coefficient of varia- bility.	
	ars.	Standard deviation, pounds.	8.97
}	11 years.	Mean weight, pounds.	70.3 66.0 51.3 51.0
		Number of children.	24 C C C C C C C C C C C C C C C C C C C
		Coefficient of varia- bility.	2. 1. 1. 10. 65. 8. 7. 6. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7.
	10 years.	Standard deviation, pounds.	සු අ. අ. 1998 197
	10 y	Mean weight, pounds.	64. 0 50. 0 60. 8 60. 8 61. 3 64. 3 64. 3
		Number of children.	936 111118 8 4 4 3 5 50 50 50 50 50 50 50 50 50 50 50 50 5
		Coefficient of varia-	10.0 12.0 11.0 11.0 11.0 11.0
	years.	Standard deviation, pounds.	ඇඹ ඇඹ විසිම සි
	9 ye	Mean weight, pounds.	58.0 0 99.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
		Number of children.	900 1 1 2 2 3 3 3 5 5 5 5 5 6 5 6 5 6 6 1 1 1 1 1 1 1 1 1
		Coefficient of varia-	වෙත විශානවන සිට අසිසිඇසි
	years.	Standard deviation, pounds.	90 46444 20 86388
	8 ye	Mean weight, pounds.	83 44 45 45 45 45 45 45 45 45 45 45 45 45
٠,		Number of children.	85.4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
		Coefficient of varia-	788578 7899 88637 8643 83670 8643
	7 years.	Standard deviation, pounds.	සුල්ල පුදුදුරු පුරිසී සිදුට්සිසි
	7 ye	Mean weight, pounds.	8
		Number of children.	23 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
		Coefficient of varia-	\$
	6 years.	Standard deviation, pounds.	048844 884444 849844 484870
	6 ye	Mean weight, pounds.	744 88 72 428 824 444 84 7.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
		Number of children.	821 1 1 1 2774824 888882
		Height, nearest inch.	All heights. 28.7.28.7.28.39.39.39.39.39.39.39.44.44.44.44.49.39.49.49.49.49.49.49.49.49.49.49.49.49.49

11. 25 10. 14 10. 28 10. 92	13.53.23 4.53.23 13.53.23	24.69		
6.91 7.47 6.43 7.30 7.23	8.51 7.45 10.97 10.45 11.39	23.04		
59.3 61.0 63.4 64.7 66.2	71.9 72.8 79.0 81.2 84.6	93.3 94.8 100.3 72.0	83.7	
30 95 95 123	118 83 90 32 32 32	80400	m	
8.68 9.61 11.92 12.34 12.45	10. 91 12. 60 11. 30 19. 22			
4.95 7.72 8.65 8.65	7.64 9.31 8.52 16.43			
57.0 59.5 62.1 63.6 69.5	73.0 75.4 75.5 75.6	93. 7 76. 0 66. 0	94.0	
79 140 162 136 115	833333	9	-	
10.39 10.84 10.84 10.62	14.84			
6.09 6.97 6.97	9.65			
55.9 58.6 62.0 64.3 66.0	71.0 74.8 79.8 68.2 85.0	86.0		
138 154 122 72 51	26 133 5	7 -		
9.11 9.98 6.73 7.02				
5.10				
56.0 57.5 61.1 60.7 63.2	78.3 59.3 80.0			
88880	66 :01			
10.85				
6.01				
55.4 56.2 58.7 58.6	75.0	61.0		
200000	i i i i	i i i i i		
52. 5 63. 0 50. 0 65. 2	96.0			
36.	П			
52.55		62	65. 67. 68. 69.	223

Table XVI.—Numbers, mean weights, standard deviations, and coefficients of variability in weight of native white children of Maryland, Virginia, North Carolina, by sex, age, and height—Continued.

GIRLS—Continued.

		Height, nearest inch.	All heights-	28.22	08 E 88 88 8 E 88 88 88	888488	31333	34444 36484
		Coefficient of varia- bility.						
	16 years.	Standard deviation, pounds,						
	16 y	Mean weight, pounds.	113.6					45.0
		Number of children.	219					1
		Coefficient of varia- bility.						
	15 years.	Standard deviation, pounds.						
	15 y	Mean weight, pounds.	107.6					
		Number of children.	331					
		Coefficient of varia- bility.						
nuea.	14 years.	ctandard deviation, sbandq						
GIRLS—Continued		Mean weight, pounds.	99.4			0.08		56.0
IKLS		Number of children.	528					-
5		Coefficient of varia- bility.						
	ears.	tandard deviation, pounds.						
	13 y	Mean weight, pounds.	89.7					
		Number of children.	695					
		Coefficient of varia- bility.						
	ears.	noitaived deviation, sbring						
	12 years. 13 years.	Mean weight, pounds.	79.7					44.0 56.0
		Number of children.	805					1 1 2
		Height, nearest inch.	All heights	27 28 28	23333 23333 23333 23333 2333 2333 2333	35 36 37 38 39	0 1 3 8 4	45. 46. 47. 48. 49.

50 52 53 54	55 56 57 58 59	8282	65 67 69 69	70 71 72
		10.61 10.01 10.95 10.92 10.52	10.38	
		11.08 10.21 12.41 12.19 11.95	12.31 25.26	
	77.0 88.0 82.0 97.8	104. 4 102. 0 113. 3 111. 6 111. 6	118. 6 125. 0 126. 6 133. 4	
	6	112 112 37 40 33	35 17 9 8	
	10. 12 11. 46	20.78 10.90 14.05 11.48 10.38	10.23 13.24 12.28	
	9.17 10.65	21.11 10.89 15.12 12.30 11.79	11.84 15.16 15.27	
157.0	101.7 85.7 95.0 90.6 92.9	101.6 99.9 107.6 107.1 113.6	115.7 114.5 124.3 135.0 125.0	99. 0
	3 10 17	833 933 453 453	• 13 17 2 4 2	1
	10.15 13.86 14.63 13.96 12.03	12. 94 13. 47 14. 73 13. 48	11.81	
	7.52 11.85 12.38 12.10 10.90	12. 49 13. 11 15. 08 14. 43 15. 19	13.04	
85.0 60.0	74.1 85.5 84.6 90.6	96.5 97.3 102.4 107.4 112.7	110.4 117.6 113.4 115.0 127.0	
1-1 2	111 118 32 50	77 86 51 51	13	
18.89 25.57 20.55	9.16 12.46 11.44 11.31 9.91	14.13 11.81 14.57 12.56 11.68	12.07	
12.54 19.13 14.26	6.46 9.51 9.31 8.61	13.00 11.40 14.63 13.11 12.33	13.73	
86.5 63.0 66.4 74.8 69.4	70.5 76.3 81.4 83.9 86.9	92. 0 96. 5 100. 4 104. 4 105. 6	113.8 115.7 125.0 74.0 95.0	
4 5 1 1 0 1 2 5 2 5 2 5 2 5 2 5 2 5 2 5 2 5 2 5 2	35 64 68 85	28 106 28 28 28	18 7 2 1 2	
8.23 10.83 10.16	10.87 9.96 12.08 14.05 12.17	16.41 10.79 10.95 21.20		
11.24 5.08 7.31 7.01	7.73 7.42 9.59 11.58 10.59	14. 69 10. 10 10. 88 21. 24		
66.0 62.6 61.7 67.5 69.0	71.1 74.5 79.4 82.4 87.0	89.5 93.6 99.4 100.2	113. 5 120. 0 152. 0	
83 83	88.88 101.001	47 41 41 5	2-1-3	
252224 10	\$\$5\$\$ 9764°—22	85.22.22.22.22.22.22.22.22.22.22.22.22.22	65. 67. 68. 68.	70.

Table XVII.—Percentage distribution, according to height, of native white children in Maryland, Virginia, and North and South Carolina, by sex and age.

BOYS.

Height, nearest inch.				1	\ge at n	earest b	irthday	·.			
reagnt, nearest men.	6	7	8	9	10	11	12	13	14	15	16
All heights	100.0			100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
7											
8 9		1		. 1							
						1				•	
0 1 2											
1		.1	-								
3		•••••									
5				.1							
		.1	l <u>.</u>								
3		3									
9	.8	.3									
o	1.3	1.1	1	.1		1		!			
1	4.5	.1	$\frac{1}{2}$	i							
2	6.8	1.7 2.4	.7		.1	•				. 4	
3 4	9.5 15.8	2.4 8.2	2.0	.1	1	i	i				
·	15. 5	0.2	2.0		.1	• 1	.1				•••••
5	17.1	13.6	4.5	.9 2.0	.3	.1		.1			
3	15.8	14.0	7.5	2.0	.9	.1	.3				
7	10. 0 7. 9	17. 2 17. 0	12. 4 17. 4	4.8 9.3	1. 3 3. 0	1.1	.1				
9	3.9	11.0	17. 0	13.5	4.5	1.1	. 4	.1	.2		
)	0.4	- 0	10.5	15.	0.0	0.0		_			
0 1	2.4 1.8	5.6 3.9	12.5 11.2	15. 4 15. 7	8.0 14.4	3. 6 6. 4	2.6	.7		.4	
	.8	2. 1	6.6	14.3	16.0	11. 1	5, 2	1.6	.8		
3	.8	.7	3.8	10.7	15.8	14.7	7.9	2.5	.8		
1	.3	.1	1.7	7.1	14.5	16.1	11.4	3.8	1.9	.7	
5	.3	.4	.9	3.5	9.2	13.4	13.8	7.8	3.0	1.4	
6			2	1.0	6.0	10.4	14.3	12.5	4.9	3.6	
Ţ		• • • • • • •	. 2	.6	3.2	9.1	11.1	14.9	7.9	2.2	,
3 9		1	$\frac{1}{2}$.1	.9	5. 6 3. 3	9. 9 9. 1	14. 9 12. 1	12.7 10.0	2.9 4.3	3.
				• 1	• •						
)					. 5	1.7	4.2	10.8	11.7	8.6	5.
2				.1	.1	.6	4.6 2.0	5.7 5.2	9.8 9.6	10.8 9.4	6. 5.
3				.1	,2	.3	2.0	3.8	8.1	9.0	7.
						. 1	.8	1.6	5. 5	10.8	7. 13.
5						.1	.4	.9	4.2	11.2	16.
3							.1	.9	4.2	7.2	11.
							.1	.1	1.5	7.2	11.
3							1		1.9	$\begin{array}{c} 5.4 \\ 2.2 \end{array}$	11. 4.
)							.1	.1	.2	2.2	4.
0								.1	.2	1.8	1.
Į											
2									.4	.7	

Table XVIII.—Percentage distribution, according to height, of native white children in Maryland, Virginia, and North and South Carolina, by sex and age.

GIRLS.

Thirly persentings				Λ	ge at n	earest b	irthday				
Height, nearest inch.	6	7	8	9	10	11	12	13	14	15	16
All heights	100.0	100. 0	100.0	100.0	100.0			100.0	100.0	100.0	100. 0
27											
28						• • • • • •	• • • • • • •				
29							l .				
30	.3			.1							
31											
32						• • • • • • •				• • • • • • •	
34				• • • • • • • • • • • • • • • • • • • •				• • • • • • •			
35											
36	3	, 1			.1						
38	.3	.3				• • • • • • •			2		
39	2.0										
40											
40	3.4	.1	2	.1							
41	11.6	. 8 3. 3	:1		.2	2					
43	8, 2	5. 7	1.3								
44	13.3	8.4	2.7	.3	.3						
45	15.0	13.7	4.9	1.0		.2	1				
46	13.6	16.6	10. 2	3.3	.4	.2	1				
47	9.9	17.6	14. 4	6.2	1. 2 3. 7	.6	.1		.2		. 5
48	6.2	13.5	19. 1	10.1	3.7	.9					
49	5. 9	9.4	15.9	12.9	5, 3	2.1	.2				
50	1.7	4.9	11.2	15, 3	8.4	3.5	1.1	.6	2		
51	, 8	2.7	8. 1	17. 1	15.0	6. 5	1.6	• •			
52	.3	1.2	6.2	13.6	17. 3	11.2	3.4	1.4	9		
53		1.7	3.4	8. 0 5. 7	14. 5 12. 3	11.2	5.0	1.4	.9	.3	
54		.7	1.1	0.7	12.3	14. 5	10.3	3.6			
55			.4	2.9	7.1	13.9	10.3	5.0	2.1	.9	
56 57		.1	.4	1.4	5.9	9.8	10.3	5.6	2.1	. 9	.5
57	.3			.7	3. 4 2. 4	10.6	11.8	9. 2 9. 8	3.4	1. 2 3. 0	.5
58			.2	$\frac{.6}{.2}$.5	6.1	12, 5 12, 4	12.2	6.1	5.1	2.7
				1							
60				.1	.6	2.7	9.2	12. 4	14.6	10.0	8.2
61		. 1			.1	.6	5.1	15.3	13. 4	10.6 17.8	5. 5 16. 9
63				i-	.1	.5	3.6	8. 3 6. 5	15. 0 12, 9	16.0	18.3
63 64						.2	1.6	4.0	9.7	13.6	15. 1
	1	i .		1							
65						.4	.2	2.6	5.9 2.5	9.4	16.0 7.8
66							:1	1.0	1 9	3.9	4.1
68							1	.1	. 2	1, 2	3. 7
69								.3	.2	.6	
70									}		
71		1	1		ł					3	
72											
				{							

Table XIX.—Percentage distribution, according to weight, of native white children in Maryland, Virginia, and North and South Carolina, by sex and age.

BOYS.

				A	ge at n	earest b	irthday				
Weight class.	6	7	8	9	10	11	12	13	14	15	16
All weights	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
5–29 -0–34 -5–39	. 5 8. 4	2.0	. 6		.1				.2		
0-41 5-49	26. 1 31. 8	14. 0 30. 5	4.0 18.7	. 9 5. 7	2.2					4	
0-54 .5-59 .0-64 .5-69	21. 6 5. 3 2. 1 2. 9	28.3 16.6 5.6 2.1	30. 5 23. 9 13. 8 5. 4 1. 4	22. 0 24. 2 22. 0 13. 6 7. 4	7. 7 15. 5 24. 3 20. 7 14. 2	2.3 6.8 15.5 20.6 19.5	1.5 6.9 13.8 20.5	3.1 4.9 9.1	1.1 2.5 4.7	.4 .4 1.1 1.8	. 6
75-79 		.1 .1 .1	1.1 .4 .1	2.4 .7 .7 .2 .1	8.8 3.5 1.7 .7	16.9 7.3 5.8 2.2 1.6	17. 4 14. 7 8. 8 6. 5 3. 8	16.6 17.1 17.1 10.6 6.9	7. 0 11. 7 12. 7 12. 1 11. 0	4. 0 4. 7 5. 4 5. 8 9. 4	2. 5 3. 1 3. 1 4. 3
00-104 .05-109 .10-114 .15-119 .20-124					.1	.7 .2 .1 .1	2. 2 . 5 . 9 . 5 . 5	5.2 4.3 1.8 1.5	10.0 6.2 5.9 4.7 3.2	9. 0 12. 6 7. 6 7. 9 7. 9	9. 9 9. 9 8. 7 13. 0 7. 5
25-129 30-134 35-139 40-144 45-149							.4 .3 .1	.1	3.0 1.3 .4 1.3	5.8 5.0 2.9 3.2 2.9	11. 2 9. 9 9. 9 3. 7
50-154 55-159 60-164											.6
65–169 170–174				•••••			•••••				
175–179 180–184 185–189				-							.6
190–194 195–199											• • • • • • • • • • • • • • •

Table XX.—Percentage distribution, according to weight, of native white children in Maryland, Virginia, and North and South Carolina, by sex and age.

GIRLS.

Weight class.				1	kge at n	earest b	irthday				
weight elass.	6	7	8	9	10	11	12	13	14	15	16
All weights	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
5-29	2.5 14.7	4.6	.1	2							
0-44 5-49	28.6 32.0	21.4 36.2	10. 0 23. 9	3. 0 11. 3	2.9	. i 1. 3					
0-54 5-59 0-64 5-69 0-74	13.9 4.8 1.7 .8	24.1 8.3 4.1 .4 .4	31. 4 18. 1 10. 1 3. 5 1. 2	24. 2 22. 3 18. 4 10. 1 5. 7	12. 4 20. 0 21. 8 17. 3 11. 1	4.3 10.7 17.4 19.8 15.5	1.0 2.7 7.8 13.7 14.4	1.0 3.5 3.9 6.3	.2 .6 .8 3.4	.3	
5-79 0-84 5-89 0-94 5-99	.3	.4	.2 .2 .1 .1	2.0 .9 1.1	6.1 2.6 2.4 1.0	12.8 6.4 4.7 2.4 2.1	14.5 11.4 13.3 6.2 5.5	12. 2 12. 7 12. 2 10. 5 12. 4	4.7 7.4 11.4 8.5 16.3	1.5 4.2 6.6 6.6 12.1	2. 3. 6.
00-104 05-109 10-114 15-119 20-124					.1 .5 .1	.8 .5 .6 .2 .1	3.0 1.6 1.6 1.4 .5	8. 2 5. 8 2. 9 2. 6 2. 4	13. 6 8. 9 7. 4 6. 8 3. 8	14.5 11.8 11.5 10.0 6.0	11. 16. 16. 12. 8.
25-129 30-134 35-139 40-144 45-149					.1	. i	.4 .1 .1 .1	.9 .9 .6 .1	2.1 1.5 .6 .4 .4	6.0 3.3 1.8 .9	10. 4. 2.
50-154 55-159						.1	.1	.1	.6	.6	:
60-164 65-169 70-174									.6	.3	:
75–179		!									
30-184 35-189											
90–194 95–199											

Table XXI.—Mean, median, and quartile heights and weights of native white children of Maryland, Virginia, and North and South Carolina, by sex and age.

Age at near-	Me	an.	First qua	rtile (Q1).	Mediar	ı (Md).	Third qua	artile (Q3).
est birthday.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.
			STANDIN	NG HEIGHT	(INCHES).			
6	45. 4±0. 096 46. 8± .064 48. 8± .057 50. 7± .060 52. 6± .057 54. 3± .064 56. 2± .073 58. 0± .076 60. 3± .119 62. 9± .156 64. 6± .159	44. 8±0. 115 46. 6±.063 48. 5±.057 50. 5±.062 52. 5±.062 54. 5±.070 57. 0±.072 59. 3±.081 61. 1±.088 62. 5±.097 63. 3±.114	43. 1 44. 8 46. 8 48. 5 50. 5 52. 0 53. 7 55. 6 57. 4 60. 0 62. 4	42. 2 44. 4 46. 4 48. 3 50. 3 52. 0 54. 3 56. 8 59. 0 60. 3 61. 4	44. 7 46. 5 48. 3 50. 2 52. 1 53. 7 55. 5 57. 4 59. 7 62. 5 64. 4	44. 3 46. 1 47. 9 50. 0 51. 9 53. 9 56. 7 59. 1 60. 8 62. 0 62. 9	46. 3 47. 9 50. 0 51. 9 53. 7 55. 6 57. 7 59. 3 62. 2 65. 0 66. 4	46. 1 47. 6 49. 5 51. 6 53. 6 56. 0 58. 7 60. 9 62. 5 63. 7 64. 4
			V	VEIGHT (PO	ounds).			
6	47.5±0,269 50.4±.162 54.5±.160 59.6±.181 65.2±.197 71.1±.235 78.0±.300 85.1±.332 95.4±.545 108.4±.828 116.7±.910	45.5±0.261 48.3±.156 52.4±.171 58.0±.208 64.0±.238 70.3±.298 79.7±.353 89.7±.420 99.4±.433 107.6±.607 113.6±.740	42. 4 46. 0 49. 8 53. 9 59. 5 70. 0 76. 5 83. 9 95. 1 104. 9	41. 0 44. 4 47. 8 52. 0 56. 7 62. 1 69. 3 78. 4 88. 2 96. 5 104. 4	46. 8 49. 9 53. 9 58. 9 64. 7 70. 6 75. 7 84. 1 93. 6 107. 7 117. 6	45. 0 47. 9 51. 7 56. 9 62. 3 68. 4 78. 2 88. 3 98. 4 106. 0 111. 9	50. 7 54. 6 58. 9 64. 6 70. 4 76. 9 84. 4 92. 1 105. 5 122. 7 129. 9	48. 6 51. 6 56. 4 63. 0 69. 6 76. 1 87. 3 99. 5 108. 8 117. 2 122. 6

Table XXII.—Correlation between heights and weights of native white school children in Maryland, Virginia, North Carolina, and South Carolina.

380 6-YEAR-OLD BOYS.

	26-96	-				-
	96-16					
	86-26	-				
	16-06					
	68-88					
	48-98					
	98-18					
	82-83					
	18-08					
å	64-84					
grou	44-94					
ght	92-72	-				
wei	27-27	2			1	
onno	12-04					
1 2-p	69-89	9		1		
each	49-99	7				
n in	29-19	က		-	-	
Number of children in each 2-pound weight group.		က			က	
of ch	69-63	ıŭ.			_	
per	19-09	7			1	
Nun	69-89	22		4	1	
	29-99	61			67	
	56-46			4.60		
	52-53	1 27		75	8	
	12-09	4		 		
	6 1-8 †	43		5		
	<u>₹</u> -9₹	46		4-		
	41-45	50		7		
	42-43	38				
	IF-0F	£3		-		
	6E - 8E	15				
	75-95	14				
	34-32	က				
	32-33	2				
	16-06					
Mean	weight at each height.	47.5		50.5	52. 5 63. 0 50. 0 65. 2	96.0
Total	ber of chil- dren.	380		22	9872	-
Height	nearest inch.	All heights.	526	484	22222	66055876655

Constants of height and weight for 6-year-old children.

	Heigl	Height (inches).	Weigh	Weight (pounds).	o i to i	Coefficient of	Regres sion of
Sex.	Mean.	Standard deviation.	Mean.	Standard deviation.	ratio (n).	correlation (r) .	weight on height.
Boys. Girls.	45.4	2.77±0.068 3.21± .081	47.5	7.76±0.190 7.27± .185	0.830±0.0108 .788±.0136	0.782±0.0134 .675± .0195	2.

Table XXI.—Mean, median, and quartile heights and weights of native white children of Maryland, Virginia, and North and South Carolina, by sex and age.

Age at near-	Me	an.	First qua	rtile (Q1).	Mediar	ı (Md).	Third qua	artile (Q3).
est birthday.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.
			STANDIN	G HEIGHT	(INCHES).			
6	45, 4±0, 096 46, 8±, 064 48, 8±, 057 50, 7±, 060 52, 6±, 057 54, 3±, 064 56, 2±, 073 58, 0±, 076 60, 3±, 119 62, 9±, 156 64, 6±, 159	44.8±0.115 46.6±.063 48.5±.057 50.5±.060 52.5±.062 54.5±.070 57.0±.072 59.3±.081 61.1±.088 62.5±.097 63.3±.114	43. 1 44. 8 46. 8 48. 5 50. 5 52. 0 53. 7 55. 6 57. 4 60. 0 62. 4	42, 2 44, 4 46, 4 48, 3 50, 3 52, 0 54, 3 56, 8 59, 0 60, 3 61, 4	44. 7 46. 5 48. 3 50. 2 52. 1 53. 7 55. 5 57. 4 59. 7 62. 5 64. 4	44. 3 46. 1 47. 9 50. 0 51. 9 53. 9 56. 7 59. 1 60. 8 62. 0 62. 9	46. 3 47. 9 50. 0 51. 9 53. 7 55. 6 57. 7 59. 3 62. 2 65. 0 66. 4	46. 1 47. 6 49. 5 51. 6 53. 6 56. 0 58. 7 60. 9 62. 5 63. 7 64. 4
			W	VEIGHT (PC	ounds).			
6	47.5±0.269 50.4±.162 54.5±.160 59.6±.181 65.2±.197 71.1±.235 78.0±.300 85.1±.332 95.4±.545 108.4±.828 116.7±.910	45.5±0.261 48.3±.156 52.4±.171 58.0±.208 64.0±.238 70.3±.298 79.7±.353 89.7±.420 99.4±.433 107.6±.607 113.6±.740	42. 4 46. 0 49. 8 53. 9 59. 5 64. 5 70. 0 76. 5 83. 9 95. 1 104. 9	41. 0 44. 4 47. 8 52. 0 56. 7 62. 1 69. 3 78. 4 88. 2 96. 5 104. 4	46. 8 49. 9 53. 9 58. 9 64. 7 70. 6 75. 7 84. 1 93. 6 107. 7 117. 6	45. 0 47. 9 51. 7 56. 9 62. 3 68. 4 78. 2 88. 3 98. 4 106. 0 111. 9	50. 7 54. 6 58. 9 64. 6 70. 4 76. 9 84. 4 92. 1 105. 5 122. 7 129. 9	48. 6 51. 6 56. 4 63. 0 69. 6 76. 1 87. 3 99. 5 108. 8 117. 2 122. 6

Table XXII.—Correlation between heights and weights of native white school children in Maryland, Virginia, North Carolina, and South Carolina.

380 6-YEAR-OLD BOYS.

Ĩ	Height	Total	Mean						_	-							N	umb	er of	child	lren	in ea	ch 2-	pour	nd w	eigh	t groi	op.								_				
	Height nearest inch.	Total num- her of chil- dren.	Mean weight at each height.	30-31	32-33	34-35	36-37	38-39	17 OF	42-43	4145	# #	\$ 4	50-51	52-53	54-55	56-57	58-59	19-09	62-63	64-65	29-99	68-69	10-71	72-73	74-75	76-77	78-79	80-81	82-83	84-85	86-87	88-89	16-06	92-93	94-95	26-94			
	All neights.	380	47.5		2	3	14	15	43	38	50	46	43	44	27	19	5	7	5	3	3	2	6		2	1									1		1			
	26 27 28 29																																							
	30 31 32 33 34																																							
	35 36 37 38 39	3	36. 0			1	2																																	
	40 41 42 43 44	5 17 26 36 60	43. 0 39. 4 40. 2 43. 1 45. 1		1	1	1 3 4 2 1	4 3 2 1	1 5 10 8 9	1 1 3 9 16	1 1 3 8 10	1 2 8	1 4 3	8	1	2	1		1																					
	45 • 46 47 48 49	65 60 38 30 15	45. 7 47. 6 49. 8 52. 6 55. 9				1	5	6 4	4 2 2	17 8 2	12 15 7 1	11 12 6 5	7 7 9 8 2	2 7 7 6 4	1 3 3 5 2	1 1 1	2 1 1	2	1 1	1		1																	
	50 51 52 53 54	9 7 3 3 1	69, 8 65, 9 70, 7 70, 3 69, 0											1		2	1	1 2	1	1	2	1	2 2 1		2	1												1		
	55 56 67 58 59 60 61 62	1	50.0					-						1																					1					

353 6-YEAR-OLD GIRLS.

															- 0	55 6-	1 1/1	111-0			· 20.											_						
Height	Total	Mean														N	umb	er of	chile	iren	in es	ch 2	-pou	nd w	eigh	t gro	up.											
Height nearest inch.	num- her of chil- dren.	Mean weight at each height.	30-31	32~33	34-35	36-37	38-39	4	42-43	44-45	46-47	48-49	50-51	52-53	54-55	56-57	58-59	19-09	62-63	64-65	29-99	69-89	70-71	72-73	74-75	76-77	78-79	80-81	82-83	84-85	86-87	88-89	90-91	92-93	94-95	26-92		
All heights.	353	45, 5	1	4	11	21	24	38	37	63	47	29	28	15	10	6	7	2	2	4	ì			1						1				L	L	1		
26 27 28 29	ι	41.0								1																												
30 31 32 33 34	1	36.0				1																									- (
35 36 37 38 39	1 1 1 7	49. 0 30. 0	1	1	1	2	1	1				1	1																									
40 41 42 43 44	12 17 41 29 47			1 1 1	1 4 1	4 4 6 2 1	2 4 8 2 4	5 9 9 8	1 7 2 9	1 1 4 6 15	2 5 4	1 2	1	1			1													1								
45 46 47 48 49	53 48 35 22 21	45. 3 46. 1 49. 2 50. 5 62. 6					3	3	9 7 2	15 13 3 1	12 9 10	7 8 5 5	1 6 8 5 3	3 2 7	1 2 4 3	2 1	1 4	1	1	1															-			
50 51 52 53 54	6 3 1 5									1			1	2		2	1	1	1	3	1			1														-
55 56 57 58 59 60 61 62	1	96, 0						1																										1		1		

Constants of height and weight for 6-year-old children.

	Heigh	ht (Inches).	Weigh	nt (pounds).	Correlation	Coefficient of	Regres- sion of weight
Sex.	Mean.	Standard deviation.	Mean.	Standard deviation.	ratio (7).	(r).	on heighl.
BoysGirls	45. 4 44. 8	2.77±0.068 3.21± .081	47. 5 45. 5	7.76±0.190 7.27± .185	0. \$30±0.0108 .788± .0136	0.7%2±0.0134 .675± .0195	2.19 1.52



TABLE XXIII.—Correlation between heights and weights of native white school children in Maryland, Virginia, North Carolina, and South Carolina.

745 7-YEAR-OLD BOYS.

		1				
				i		
		-				
		_				
)			
	16-06		,			
	68-88					
	48-98					
	98-1-8	-				
ć.	88-28	-				
ron	18-08			-		
ght g				-		
weig	64-84					
pun	22-92					
2-poi	21-12					
Number of children in each 2-pound weight group.	27-27					
in e	17-07	2				
lren	69-89	4				
chile	49-99	4				
r of	29-19	13		-	•	1
mbe	89-29	13		-		
Nu	19-09	72				П
	69-89	32		-		
	49-99	20	-	-		
	22-79	09				
	52-53	81		-		
	19-09	1 112				
	6 1- 8†	91			-	
	<u>₹₽</u> -9₹	88		-		
	97-77	73				
	42-43	49				
	1₽-0₽	82				
	68 - 85	∞				
	78-98	7				
	34-32	-				
Mean	weight at each height.	50.4	57.0	63.8 58.6	75.0	61.0
_		745	-	20.20	-	П
Tot	ber of chil- dren.					
	Height nearest ınch.	All heights.	- F	52 TO	25 57 55 50 57 55 50 57 55 50 57 55 50 57 55 50 57 55 50 57 57 57 50 57 57 57 50 57 57 57 50 57 57 57 50 57 57 57 50 57 57 57 50 57 57 57 50 57 57 57 50 57 57 57 50 57 57 50 57 57 57 50 57 57 57 50 57 57 57 50 57 57 57 57 57 57 57 57 57 57 57 57 57	60 61

Constants of height and weight for 7-year-old children.

	Heigh	Height (inches).	Weight	Weight (pounds).	Correlation	Coefficient of	Regresion
Sex.	Mean.	Standard. deviation.	Mean.	Standard. deviation.	ratio (η) .	correlation (r) .	weigl on heigh
Boys.	46.8	2.58±0.045 2.53±.044	50.4	6.26±0.115 6.26±.110	0.704±0.0125 .725± .0118	0.603±0.0157 .679±.0134	

1.53

of of sht

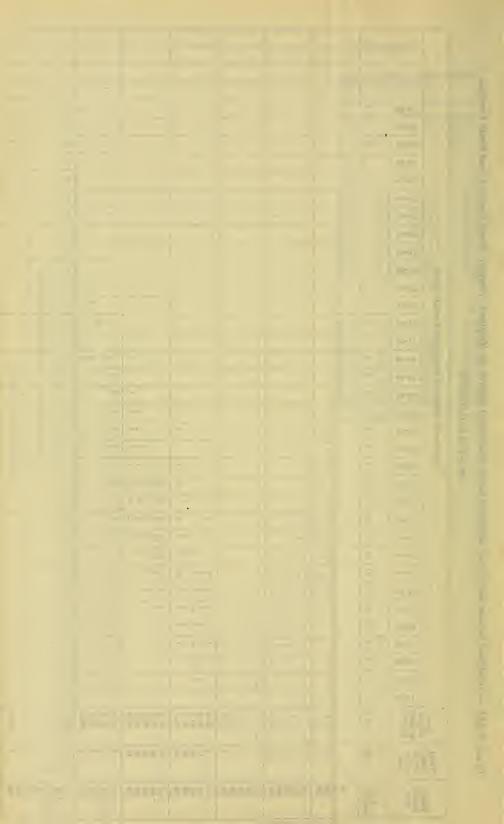


Table XXIII.—Correlation between heights and weights of native while school children in Maryland, Virginia, North Carolina, and South Carolina.
745 7-YEAR-OLD BOYS.

Heigh	Total num-	Mean														N	umh	er of	child	lren	in ea	ch 2	-pou	nd w	eigh	t grou	ıp.							_		
neares inch.	num- her of chil- dren.	Mean weight at each height.	34-35	36–37	38-39	40-41	42-43	4145	46-47	48-49	50-51	52-53	54-55	66-37	58-59	66-61	62-63	64-65	66-67	69-89	70-71	72-73	74-75	76-77	78-79	80-81	N2-83	84-85	28-87	88-89	90-91				1	
All height:	. 745	50.4	1	7	8	29	49	73	89	91	112	81	60	50	32	24	13	13	4	4	2						1	1			1					
3 3 3 3	1	57.0												1																						
3 3 3 3 3	1 1 2	60. 0 48. 0 61. 5								1					1	1		1																		
4 4 4 4	8 1 13 18 61	39. 9 37. 0 42. 3 42. 7 45. 2		2 1 2 1 1	1 1 3	3 10	1 6 8 10	1 1 3 10	2 2 16	1	1 6	1			1																					
4 4 4 4 4	101 104 7 128 3 127 9 82	46, 0 47, 9 50, 7 51, 6 55, 1	1		3	9 6 1	15 5 2 1 1	26 15 11 4 1	16 24 14 12 3	19 20 19 21 3	5 18 37 25 12	2 8 23 24 13	3 5 10 16 14	1 2 5 13 10	1 3 5 12	3 5	1 2	2 1 4	1	1 I	1										i					
5 5 5 5	29 16 3 5 1	57, 5 58, 6 59, 9 58, 6 56, 0								1	3 2 3	5 4	6 5	8 5 2 1 1	6 2	8 2 4 1	4 2 3 1	2 2	1 1 1	1 1	1							1								
5555	3 3 7 8 9							1				1		1													1									
6	O I																																			

735 7-YEAR-OLD GIRLS.

																		rr-c		9																
Height	Total num-	Mean														N	umh	er of	chile	iren	in es	ch 2	-pou	ind v	reigh	t gro	up.									
Height nearest inch.	num- her of chil- dren.	Meau welght at each height.	34-35	36-37	38-39	40-41	42-43	14	46-47	48-49	50-51	52-53	54-55	26-57	58-59	60-61	62-63	64-65	29-99	69-89	17-07	72-73	74-75	76-77	78-79	80-81	82-83	84-85	86-87	88-89	16-06					
All heights.	735	48, 3	3	10	21	58	60	99	103	103	93	68	39	22	18	19	6	8			2	1	2		1	1										
31 32 33 34																																				
35 36 37 38 39	1 2	56. 0 47. 0								1				1																	The same of the sa					
40 41 42 43 44	1 6 24 42 62	36. 0 40. 3 42. 4 41. 6 44. 0	2	1 1 2 3	1 3 6 6	2 8 11 8	1 3 10 3 10 9	2	3 2 2 5 8	1 1 7	2 1 2	1 1																			,		ľ	1		
45 46 47 18 49	101 122 129 99 60	44. 5 46. 8 48. 8 50. 8 53. 2		3	1	1 7	5 12 7 15 5 5 3	3 2 1	2 16 1 29 1 29 1 14 1 2	11 25 30 18	4 15 20 25 16	3 8 11 16 17	1 1 11 6 7	3 4 5	1 5 7	1 1 2 3	1 1 1	1 2															1	-		
50 51 52 53 54	36 20 9 5 5	55. 4 56. 2 58. 7 63. 8 58, 6					1 1		1	1	5 2 1	5 1 2	8 4 1	5 2 1 1	2 2 1	3 5 1 1	1 1	2 2 1			1	1	1		1	1								1		
55 56 57 58 59	1	75. 0				,																	1													
60 61	1	61.0														1										1							1			
					1															1													I			

Constants of height and weight for 7-year-old children.

	Heig	ht (inches).	Welgl	at (pounds).	Correlation	Coefficient of	Regres-
Sex.	Mean.	Standard. deviation.	Mean.	Standard. deviation.	ratio (η).	correlation (r).	weight on height.
BoysGirls	46. № 46. 6	2.58±0.045 2.53±.044	50. 4 48. 3	6.56±0.115 6.26± .110	0.704±0.0125 .725± .0118	0.603±0.0157 679± .0134	1. 53 1. 68

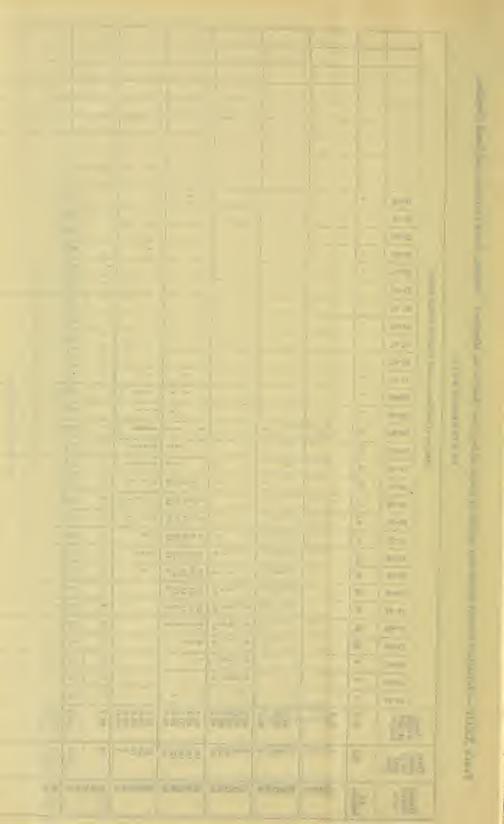


TABLE XXIV.—Correlation between heights and weights of native white school children in Maryland, Virginia, North Carolina, and South Carolina.

904 8-YEAR-OLD BOYS.

		1				
	96-46	-				
	85-53					
	16-06			-		
	68-88					
	28-98					
ŀ	28-1-8					
-	82-83	63				-
-	1	7			1	
	18-08	-				-
٠,	62-82	!				
}.	22-92	60				
dn.	92-12	-				
t gro	22-73	9				
eigh	12-02	9				
d w	69-89	10				
noc	29-99	13	-			
h 2-1	29-19	43				
eac	62-63	38				
en in	19-09	25				
ildr	28-29	68				1
Number of children in each 2-pound weight group.	49-99	83			1	1
ber	99-19	112			<u> </u>	
Zum	52-53	100	-		1	1
			-		1	1
1	16-06	0 129				1
	6 1-8 7	08				
	<u>₹</u> -9₽	61				
	21-11	39			1	1
	42-43	15			<u> </u>	
	I#-0#	2			1	
	6E-8E	60				
	78-98	63				
	34-35					
	32-33					
	18-08					
	62-82					
	22-92					
= ;		54. 5				
Mea	weight at each height.	54				
-	12.1	-				
otal	of chil- dren.	₹06				
					1	
pht.	nearest inch.	All neights.	38			
Hel	ing	hei			1	

Constants of height and weight for 8-year-old children.

Regres-	weight on height.	2.15
Coefficient of	correlation (r) .	0.682±0.0120 .719±.0111
No. it of summer	ratio (η) .	0.718±0.0109
Weight (pounds).	Standard deviation.	7.13±0.113 7.39±.121
Weigh	Mean.	54.5
Height (inches).	Standard deviation.	2.54±0.040 2.47±.040
Heigh	Mean.	48.8 48.5
	Sex.	Boys. Girls.

109764°-22. (Face p. 36.) No. 3

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Table XXIV.—Correlation between heights and weights of native white school children in Maryland, Virginia, North Carolina, and South Carolina.

904 8-YEAR-OLD BOYS.

Ī	Height.	Total number of chil-	Mean										_				Nu	mbe	rofo	hild	ren i	n eac	h 2-1	pour	ıd w	eight	gro	ъ.											_	 1
	Height, nearest inch.	of chil- dren,	Mean weight at each height.	26-27	28-29	30-31	32-33	34-35	36-37	38-39	40-41	42-43	44-45	46-47	48-49	50-51	52-53	54-55	56-57	58-59	60-61	62-63	64-65	29-99	69-89	17-07	72-73	74-75	76-77	78-79	80-81	82-83	84-85	86-87	88-89	16-06	92-93	94-95		
	All neights.	904	54.5	L				_	2	3	10	15	39	61	80	129	100	112	83	68	70	38	43	13	10	6	6	7	3	1	2	2						1		
	38 39 40 41 42 43 44	1 2 6 7 18	52.0 51.0 46.3 44.7 47.4						2	1	1	2 1	3 4	1 1 3	1	1 1 3	1 1 3	2		1																				
	45 46 47 48 49	41 68 112 157 154	47. 6 48. 0 50. 3 52. 2 54. 7							1	2 3 1 2	4 4 2 1 1	8 11 4 4 1	11 15 12 12 12 3	8 11 24 18 11	1 12 36 35 27	4 8 9 31 25	2 12 29 28	7 11 20	1 2 4 9	3 1 7 17	1 7	1 2 1					1 1	1		1									
	50 51 52 53 54	113 101 60 34 15	56. 8 57. 9 61. 2 64. 6 66. 8								1		2 2	1 2	3 2 1	6 4 3	10 5 1 2	19 13 5 1	19 20 3 1 1	23 17 7 2	18 13 9 2	6 8 9 6 1	4 7 15 7 2	1 3 4 1	1 1 3 4	2 2	1 1 2	2 1 1 1	1	1		1								
	55 56 57 58 59	8 2 2 2 2 1	74. 0 62. 0 60. 5 72. 0 58. 0																1	1			1 1 1 1	1		2	2				1	1						1		

854 8-YEAR-OLD GIRLS

															8	51 8-	YE	R-C	<u></u>	GII	KLS.																		
Height,	Total number of chil-	Mean weight														Nu	mhe	r of	ehild	lren i	in ea	ch 2-	pour	ad w	eigh	gro	ъ.												
Height, nearest inch.	of chil- dren.	Mean weight at each height.	26-27	28-29	30-31	32-33	34-35	36-37	38-39	40-41	42-43	4	46-47	48-49	50-51	52-53	54-55	56-57	58-59	19-09	62-63	64-65	29-99	69-89	17-07	72-73	74-75	17-97	78-79	80-81	82-83	84-85	86-87	88-89	90-91	92-93	94-95		
All heights.	854	52, 4	1			1	2		6	32	29	61	72	95	122	96	92	60	53	47	27	22	10	10	5	3	2			2		1		1		1	1		
38 39 40 41 42 43 44	1 2 1 11 23	55, 0 45, 0 35, 0 41, 4 42, 8					1		2	5 10	2 5	2 1 4	1 2	2			1															,							
45 46 47 48 49	42 87 123 163 136	44.6 46.8 49.4 51.0 53.2	1				1		1 1	7 6 1 2 1	10 7 4 1	8 16 13 11 4	3 22 14 22 6	16 26 28 14	12 24 35 28	2 3 22 22 21	2 11 19 25	1 2 11 15	2 5 9	1 1 2 1 8	1 2	4	2				1												
50 51 52 53 54	96 69 53 29 9	56. 0 57. 5 61. 1 60. 7 63. 2				1						1	1	3	14 3 1	16 9 1	17 12 2 3	18 6 5 2	9 10 12 5	6 12 11 4	2 5 11 6	1 6 3 5 2	2 1 2 1 2	3 2 2	3	1				1							1		
55 56 57 58 59	3 3 2 1	78, 3 59, 3 88, 5 80, 0												1						1				1		1	1					1		1		1			
		:																																					
					-																																		

Constants of height and weight for 8-year-old children.

	Heig	ht (inches).	Weigh	nt (pounds).		Coefficient of	Regres- sion of
Sex.	Mean.	Standard deviation.	Mean.	Standard deviation.	Correlation ratio (7).	correlation (r).	weight on height.
BoysGirls	48.8 48.5	2.54±0.040 2.47± .040	54.5 52.4	7.13±0.113 7.39± .121	0.718±0.0109 .751± .0101	0.682±0.0120 .719± .0111	1.91 2.15

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TABLE XXV.—Correlation between heights and weights of native white school children in Maryland, Virginia, North Carolina, and South Carolina.

889 9-YEAR-OLD BOYS.

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			-	+	+		-		
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			-	1					
			1	1					
			1	-	-			-	
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				-	-			_	
			1	L	Ц.				
			1		IJ_				
	onb.		1						
-	it gr	901-101			1				
	Number of children in each 3-pound weight group.	101-103							
	nd v	001-86	-			-	9		
	nod-	26-96							
	ch 3	\$6 - 26	2						
	in ea	16-68	67		-	4			
	lren	88-98	7			63	-	-	
	child	83-85	60		-		1 2		
	r of	80-85	50				0 0		
	umpe	64-11	41			0	-		
	Nu	94 -1 4	98		-	· 00 — 4	2211	1	
		27-17	83		6	0000	4		
		04-89	56		ma	0 1 8	44		
		49-99	93		5.3	100	460-		
			112	-	13	229	9		
		19-69	120		19	12 10	-	i	
		89-99	129		252	19		1	
		53-55	129		37	372			
		29-09	117		30	2	-	-	
		6 1- 2 1	39 1		0.00				
		91-11	18		-			 	
		41-43	100		-				
		0 1- 8E	100		1				_
		28–37							
-	ı t		59.6		6.9	62.0 64.3 66.0	0,00,00	0	0
	Mea	at each	59.		555	66.4	71.0 74.8 79.8 68.2 85.0	88	105.0
-			68	-	8.4	22 12	25.6 138	- ,	_
	Tota	of children.	889		22	=	C1 P4		
-			- zi	-	0 = 0	282	98796	0 = 0	~
	eight	nearest inch.	AH heights.		10.10	ດຳດຳດ	55 55 59 59	8288	ŏ
1_	H	ц.,	he						1

Constants of height and weight for 9-year-old children.

1	weight on height.	1. 92
8000	correlation (r).	0.643±0.0133 .661± .0127
	Correlation ratio (η).	0.744±0.0101 .724±.0107
Veight (pounds).	Standard deviation.	7.98±0.128 9.24± .147
Weigl	Mean.	59.6 58.0
Height (inches).	Standard deviation.	2.66±0.043 2.69±.043
Heig	Mean.	50.7
	Sex.	Boys. Girls.

-				ſ		_								-			_		_	_	_			_		_			 	_		 	 	_		
Heir	ght.	Total	Mean														Nu	ımbe	er of	child	lren :	in ea	ch 3	pou	nd w	eigh	t gro	up.								1
Heig near inc	rest ch.	number of chil- dren.	Mean weight at each height.	35-37	38-40	41-43	44-46	47-49	50-52	53-55	56-58	59-61	62-64	65-67	02-89	71-73	74-76	61-22	80-82	88-88	88-88	89-91	92-94	95-97	98-100	101-103	104-106									
A	li hts.	889	59.6		1	1	18	39	117	129	129	120	112	93	56	29	26	4	5	3	2	2	2		1											
	28 29 30 31 32 33 34	1	63, 0										1																							
	35 36 37 38 39	1	48. 0 65, 0					1						1																						
	40 41 42 43 44	1 1	61. 0 63. 0 44. 0				1					1	1																		·					
	45 46 47 48 49	8 18 43 83 120	46, 5 49, 9 52, 1 52, 8 54, 3		1	1	3 4 2 5 2	2 6 7 8 9	2 3 19 32 37	3 7 24 29	2 4 4 26	2 6 9	3 4	1 2	1	1																				
	50 51 52 53 54	137 140 127 95 63	57. 2 59. 9 62. 5 65. 4 68. 2				1	3 2 1	5	34 20 8 2	31 31 19 7 4	35 30 22 10 3	8 28 35 22 9	4 21 25 20 14	1 2 7 21 12	4 1 1 5 9	1 4 6 7	1	1 1 1	2	1				1											
	55 56 57 58 59	31 9 5 1	89.0							1	1	1	1	4	8 1 2	7	5 2	3	2	1	1	1	1 1													
	60 61 62 63	3	74. 0 59. 0	3								1					1																			

900 9-YEAR-OLD GIRLS.

															900	9-1	LEA	IV- 0	БЪ	GIM	.ша.													
Height	Total number	Mean														Nı	ımb	er of	chil	lren	in es	ach 3	-peu	nd w	reigh	t gro	oup.							_
Height, nearest inch.	number of chil- dren.	weight at each height.	35-37	38-40	41-43	4 49	47-49	50-52	53-55	56-58	59-61	62-64	65-67	68-70	71-73	74-76	61-11	80-82	83-85	88-88	89-91	92-94	95-97	98-100	101-103	104-106								
All heights.	900	58. 0	1	1	18	42	69	122	151	107	127	78	62	52	26	15	5	7	4	4	3		1	1		4								۱
28 29 30 31 32 33 34	1	50.0						1																										
35 36 37 38 39																																		
40 41 42 43 44	1 2 3				1	1	1		1			1						1																
45 46 47 48 49	9 30 56 91 116	47. 9 47. 0 49. 5 51. 2 54. 1	1	1	9 6 1 1	6 8 12 10 4	5 13 21 17	1 4 12 23 27	1 2 5 18 30	1 1 3 11 16	1 4 15	1 1 2	1 2 1	1	1								1											
50 51 52 53 54	138 154 122 72 51	55. 9 58. 6 62. 0 64. 3 66. 0				1	9 3	30 16 5 1	37 37 10 7 3	22 25 19 7 1	19 34 31 12 10	13 12 24 12 6	3 15 13 10 9	3 8 9 14 8	2 5 5 6	1 3 1 4	1 1 2	1	1	2	1			1										
55 56 57 58 59	26 13 6 5 2	71. 0 74. 8 79. 8 68. 2 85. 0						1		1	1	6	4 3 1	4 4	1 1 1	2 2 1 1	1	2 2	1 2	1	1					1 1 1								
60 61 62 63	1																			1						1							-	

Constants of height and weight for 9-year-old children.

	Heigl	ht (inches).	Weigh	it (pounds).	Correlation	Coefficient of	Regres- sion of
Sex.	Mean.	Standard deviation.	Mean.	Standard deviation.	ratio (η).	correlation (τ).	weight on height.
Boys	50. 7 50. 5	2.66±0.043 2.69± .043	59. 6 58. 0	7.98±0.128 9.24± .147	0.744±0.0101 .724± .0107	0.643±0.0133 .661± .0127	1. 92 2. 27

TABLE XXVI.—Correlation between heights and weights of native white school children in Maryland, Virginia, North Carolina, and South Carolina.

973.-10-YEAR OLD BOYS.

	128-130		1	~		
	125-127					
	122-124					
	119-121					
	811-911					
	113-115				-	
	211-011					
ō,	601-201	-		-		
grou	901-101				-	
ight	101-103					
d we	001-86	-		-2		
Number of children in each 3-pound weight group.	26-96	4			-	
h 3-p	16-26	4		-		
eac	16-68	10		2	-	
en in	88-98	œ		-	63	
uldre	83-85	14		040		
of cl	28-08	27		N 63		
ıber	62-22	<u></u>		707		
Nun	92-12	73		ىد		
	82-12	83		7 67		
	02-89	128				
	29-99	128	_	H		
	f9-79	143				
	19-69	127	_	-		
	89-99	86				
	23-22	- ~ 62		-		
	29-09	47				
	6 1- 2†	13		-		
	91-11	00				
	0, 1,				1	
	41-43					
	41-43					
	01-88					
ī	75-3£ 01-8£		0	±100	0000	0,
Mean	75-3£ 01-8£	65.2	65.0	75.6 75.6	93.7 96.0 76.0 66.0	94.0
1	weight at each height.	65.2			6 93.7 1 96.0 1 76.0 1 66.0	1 94.0
1	weight at each height.			22 85.5 75.6		
Total	number weight of chil- at each dren. height.	973 65.2	,1	25.52	11116	-
Total	weight at each height.	65.2	,1			

Constants of height and weight for 10-year-old children.

Regres-	(r). weight on (r) .	0.693±0.0113 2.38 .660±.0125 2.52
ů 		
1000	ratio (η).	0.720±0.0104 .709± .0110
Weight (pounds).	Standard deviation.	9.09±0.139 10.79± .168
Weigh	Mean.	65.2
Height (inches).	Standard deviation.	2.64±0.040 2.83±.044
Heig	Mean.	52. 6 52. 5
	Sex.	Boys. Girls.



_											_		-		-		_	_		-	-	-	_			_		_				_				 			
He	ight,	Total	Mean														Nu	mbe	rofe	hild	ren i	n ea	eh 3-1	pour	ıd w	eight	gro	up.											
nea	ight, irest ch.	number of chil- dren.	weight at each height.	35-37	38-40	41-43	44-46	47-49	50-52	53-55	92-99	29-61	62-64	65-67	02-89	71-73	92-∓2	62-22	80-82	83-85	88-98	16-68	92-94	95-97	98-100	101-103	104-106	107-109	110-112	113-115	116-118	119-121	122-124	125-127	128-130				_
hei	MI ghts.	973	65, 2	1			8	13	47	59	86	127	143	128	128	63	73	33	27	14	8	5	4	4	1			1											
	35 36 37 38 39	1	65.0											1																									
	40 41 42 43 44	1	37. 0 45. 0	1			1																														-		
	45 46 47 48 49	3 9 13 29 44	45. 0 50. 2 51. 6 55. 1 55. 4				3 2 2	1 2 3 4	4 3 8 11	1 4 8 8	1 6 9	1 1 2 8	4	1						1																			
	50 51 52 53 54	78 140 156 154 141	58. 4 60. 7 64. 0 66. 5 68. 2					1 1	11 5 2 2 1	12 15 5 1 2	15 30 17 6	16 27 33 23 12	12 36 39 30 13	8 11 22 36 32	2 10 21 31 33	2 8 16 14	1 4 7 13	1 6 6	2 1 2 2	3	1	2	2	1															
	55 56 57 58 59	90 58 31 9 7	71. 6 74. 5 77. 9 76. 7 84. 4							3	1	2 2	5 2 2	10 4 1 1	21 8 1	11 8 3 1	21 15 8 1 1	5 9 4 1	6 3 5 2 1	4 2 3 1	2 2 1 1	1 2	1	1	1			1											
	60 61 62 63 64	5 1 2	95.0											1	1		1		3		1			1															
	65 66																																						

936 10-YEAR OLD GIRLS.

																10			JLD																		
Height	Total	Mean														Nu	ımbe	rof	ehild	ren i	in ea	ch 3-	pou	nd w	eigh	t gro	up.										
Height, nearest inch.	Total number of chil- dren.	weight at each height.	35-37	38-40	41-13	44-16	47-49	50-52	53-55	56-58	29-61	62-64	29-99	02-89	71-73	74-76	62-22	80-82	83-85	88-98	89-91	92-94	95-97	98-100	101-103	104-106	107-109	110-112	113-115	116-118	119-121	122-124	125-127	128-130			
All heights.	936	64.0		1	5	11	18	57	100	107	136	107	104	91	51	61	16	11	21	12	5	6	5	3		4	1		1		1			1			
35 36 37 38 39	1	50.0						1																													
40 41 42 43 44	2			1				1	1	1										1															1		
45 46 47 48 49	4 8 11 35 50	60. 8 45. 8 50. 8 52. 7- 54. 7			3 1 1	3 1 4 1	1 3 5 3	1 4 5 10	1 1 1 12 15	2 4 10	3 6	2	2	1	1																						
50 51 52 53 54	79 140 162 136 115	57. 0 59. 5 62. 1 63. 6 69. 5				1 1	2 3 1	13 10 5 5	19 15 20 13 1	17 28 21 15 7	14 46 35 18 6	6 18 31 27 13	7 8 18 23 21	6 15 14 27	1 7 7 7 12	4 3 8 16	3 2	2 2	1 4	1 1		1 1 1	1 1			1					1						
55 56 57 58 59								1	1	2	3 4	8 1 1	14 9 1	14 5 7 1	7 10 2 2	9 10 0	2 4 2 2 1	1 2 2 2	5 5 4 2	1	1 1 2	1	1	1 2		1.	1							1			
60 61 62 63 64	1 1 1	93. 7 96. 0 76. 0 66. 0											1			1				2	1		1			1			1								
66	1	94.0																				1										1					

Constants of height and weight for 10-year-old children.

	Heig	ht (inches).	Weigi	ht (pounds).		Coefficient of	Regres-
Sex.	Mean.	Standard deviation.	Mean.	Standard deviation.	Correlation ratio (η) .	correlation (r).	weight on height.
BoysGirls	52, 6 52, 5	2.64±0.040 2.83± .044	65, 2 64, 0	9.09±0.139 10.79± .168	0.720±0.0104 .709± .0110	0.693±0.0113 .660±.0125	2. 38 2. 52



TABLE XXVII.—Correlation between heights and weights of native white school children in Maryland, Virginia, North Carolina, and South Carolina.

871 11-YEAR OLD BOYS.

	1					
	1					
	:	i				
	717 007	-			_	
	121-891					
	291-191		-			
	160-163	1				
	691-991					
	152-155					
	148-151					
	21-11-11					
	140-143					
ė	681-981					
gron	132-135					
ght	128-131				-	
Number of children in each 4-pound weight group.	121-121					
pund	120-123	-	_			П
4-pc	611-911	-		-		
each	1	-		C1		
nin	112-115		-	2 1	-	
ldre	111-801	-Jr	-		-	
fchi	701-101		_	- 2		
o Jec	801-001	20	_	- 22 -	8 =	
nun	66-96			eo eo eo	01-01	
Z	92-95	22	_	- D 10 CC		
	16-88	- 23	-		10-1-1	
	28-18	4		0146	ļ	
	88-08	59		76113	-	
}	64-94	95		10000	4 -	
	72-75	155		3.0	m	
	17-89	127		}∞≈¬	_	
1	29-19	149		72000		
	69-09	105		010		
	69-99	\$				
	25-22	92		-		-
	19-81	.o				
	21-11	9				
	10-43					
		-	-	72.3 79.0 81.2 84.6	93.3 94.8 100.3 72.0	2.7
,	wean weight at each height.	71.1		25.22	8 9 9 9 27	88
		=	i	8888	Stro 40101	m
	Total number of chil- dren.	871		J J. M. J. (-5		
-			-	02.00	0-00-	123
	Height, nearest inch.	All eights.		55 55	95258	65
	He ne ir	hei	1		(

Constants of height and weight for 11-year-old children.

Regression of	weight on height.	લંલં
Coefficient of	correlation (r) .	0.657±0.0130 .647±.0135
ocito(caro)	ratio (η) .	0.726 ± 0.0108 $.695\pm.0120$
Weight (pounds).	Standard deviation.	10.30±0.166 12.87±.211
Weigh	Mean.	71.1
Height (inches).	Standard deviation.	2. 82±0. 046 3. 00± . 049
Heigh	Mean.	54. 3
	Sex.	Boys.

109764°-22. (Face p. 36.) No. 6



																																				_	 	_	
Height	Total	Mean														Nu	mbe	r of c	hild	ren i	n ea	ch 4-	pour	nd w	eight	gro	up.												
Height, nearest inch.	Total number of chil- dren.	Mean weight at each height.	40-43	41-17	48-51	52-55	56-59	60-63	64-67	68-71	72-75	62-92	80-83	81-87	88-91	92-95	66-96	100-103	104-107	108-111	112-115	116-119	120-123	124-127	128-131	132-135	136-139	140-143	144-147	148-151	152-155	156-159	160-163	161-167	171-891		-		
All heights.	871	71. I		6	6	26	48	105	149	127	155	95	59	41	22	13	8	4	4		1	1	1																
34 35 36 37 38 39	1	82.0											1																										
40 41 42 43 44	1	71.0								I																									1				
45 46 47 48 49	1 1 3 10 10	75, 0 45, 0 54, 3 59, 5 55, 0		I	1 2 2	1 2 3	1 1 4	3 1	1		1		1																										
50 51 52 53 54	31 56 97 128 140	57. 9 61. 1 65. 3 66. 4 70. 8		2 2 1		4 9 5	12 10 7 7 4	8 16 30 31 10	18 28 39 27	2 3 15 25 39	7 13 32	1 8 14	1 6	2 I 3	1	1 2	1																				- "		
55 56 57 58 59	117 91 79 49 29	72. 7 74. 9 79. 5 82. 8 83. 2				1	2	3	2! 11 2	18 15 6 1 2	42 26 19 11 2	20 17 17 17 11 7	6 11 15 9 8	1 5 11 5 4	4 2 3 6	4 2 1	1 1 1 2	1 2	1 1 1		1	I												1					
60 61 62 63 64	15 5 2 3 1	93. S 79. 0				-		1 1			1		2	7 2	5 1	1 1 1	1	1					1														Ì		
65	1	74.0									1																												

847 11-YEAR OLD GIRLS.

_																		YE		OBL																			
H	oight	Total	Mean														Nu	mbe	ofe	hild	ren i	a eac	h 4-1	oun	ıd we	eight	grou	ıp.											
ne ii	eight, earest nch.	Total number of chil- dren.	Mean weight at each height.	40-43	44-47	18-51	52-55	56-59	60-63	64-67	68-71	72-75	62-92	80-83	84-87	16-88	92-95	66-96	100-103	104-107	108-111	112-115	116-119	120-123	121-127	128-131	132-135	136-139	140-143	144-147	118-151	152-155	156-159	160-163	164-167	168-171			
he	All ights.	847	70.3	1	7	17	39	75	130	129	118	108	69	41	41	26	16	8	7	ī	4	5	1	1		1					1					1			
	34 35 36 37 38 39																																						
	40 41 42 43 44	2	67.5						1			I																											
	45 46 47 48 49	2 5 8 18		1	3	4 I 5	3 4	1 1 3	1 1	2 1													_														Ì		
	50 51 52 53 54	30 55 95 95 123	59. 3 61. 0 63. 4 64. 7 66. 2		1 3	2 1 1	4 9 6 8 2	9 13 16 18 12	10 9 33 23 27	1 10 19 18 30	1 4 12 13 25	I 5 4 10 15	1 . 1 . 2 . 7	1 2	2	1 1 1			1																				
	55 56 57 58 59	118 83 90 52 32	71, 9 72, 8 79, 0 81, 2 84, 6				1	2	12 8 5	21 12 7 3 2	30 20 8 3 1	18 17 21 9 3	21 11 10 6 5	4 9 11 6 7	2 3 10 14 3	3 1 9 5 3	1 3 3 3 3	1 2	1 2		2	2 1	1		20														
	60 61 62 63 64	23 5 4 2 2	93. 3 94. 8 100. 3 90. 0 72. 0							1	1	3	4	1	5 1 1	1	2 1 2	3		1	1	1				1					1		1	1		1			
	65	3	83.7				1					1												1															

Constants of height and weight for 11-year-old children.

	Heig	ht (inches).	Weigl	ht (pounds).		Coefficient of	Regres-
Sex.	Mean.	Standard deviation.	Mean.	Standard deviation.	Correlation ratio (η).	correlation (r).	weight on height.
Boys Girls	54. 3 54. 5	2,82±0,046 3,00±,049	7L. 1 70. 3	10.30±0.166 12.87± .211	0.726±0.0108 .695± .0120	0.657±0.0130 .647± .0135	2.41 2.79

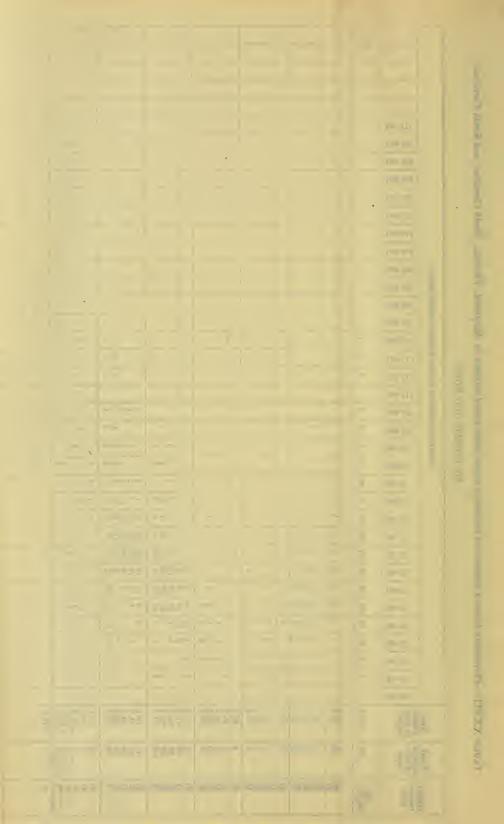


Table XXVIII.—Correlation between heights and weights of native white school children in Maryland, Virginia, North Carolina, and South Carolina.

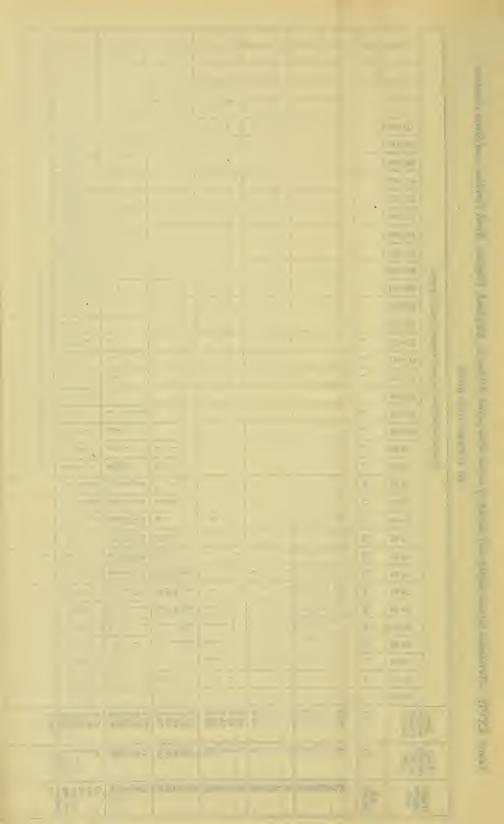
781 12-YEAR OLD BOYS.

Number of the first of the firs	
Number 06-69 80 1.2	
Number 66-69 80	
Number 66-69 80	_
Number 66-69 80	_
Number 66-69 80	
Number 66-69 80	
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#6-08	-
#1-07 88	
#1-07 88	
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19-09 75	-
	-
69-29	
	-
¥5-03 4	-
61-97	-
₹ ₹ -0₹	-
Mean weight at each height. 78.0	-
Total number of chil-dren. 781	
Height, Total vimble a fren. heights. 781 heights. 781 68 69 69	

Constants of height and weight for 12-year-old children.

Regres	weight on helght.	2, %
Coefficient of	correlation (r) .	0.706±0.0121 .703±.0120
	Correlation ratio (η) .	0.736±0.0111 .719±.0115
Weight (pounds).	Standard deviation.	78.0 12.43±0.212 79.7 14.85±.250
Weigl	Mean.	78.0
Height (inches).	Standard deviation.	3.03±0.052 3.02±.051
Heigl	Mean.	56.2
	Sex.	Boys.

109764°-22. (Face p. 36.) No. 7



																			ALL											 	 			
Height	Total	Mean												N	ımbe	er of	chile	tren	in ea	ch 5	pour	nd w	eigh	t gro	up.									
Height nearest inch.	Total numbe of chil- dren.	weigh at eac height	t h	#1-0#	45-49	50-54	55-59	60-64	69-59	70-74	75-79	80-84	8589	16-06	95-99	100-104	105-109	110-114	115-119	120-124	125-129	130-134	135-139	140-144	145-149	150-154								
All heights	. 78:	78.	0			4	12	54	108	160	136	115	69	51	30	17	4	7	4	4	3	2	1						,					
4: 4: 4: 4: 4: 4: 4:		70. 55. 79.	5			1	1			1	1																							
5: 5: 5: 5: 5:		64. 65. 66. 68. 70.	8 4 4 1 8			1	1 5 2 2	2 8 13 16 7	1 2 15 18 27	2 8 18 36	1 1 6 11	1 2 1 5	2	1	1																			
55 56 57 55	10 3 11: 7 8 7 8 7 7	73 77. 79. 781. 81.	1 6 8 8 0					1 1	15 3 4	37 25 16 9 4	26 30 29 15 12	8 22 21 22 21	6 13 10 13 7	2 4 3 7 13	2 2 3 4	2 2 5	1	1	2	1		1	1											
66 66 66 66	3 3 2 1	87. 92. 100. 105. 106.	5 8 3 2 5							3	2 2	5 7	10 4 2	5 10 4 1	6 5 4 1 1	1 4 2 1	1 1 1	2 2 1		2	1 1	1												
6: 6: 6: 6:	7	3 118. 115. 96.	0		_									1	1			1	1 1		1													
						1																												

805 12-VEAR OLD GIRLS

															80	5 12	- Y 15.	AK	OLL) GI	RLS	•												
Height	Total	Mean														Νι	mhe	er of	child	lren i	in ea	ch 5-	pon	nd w	eigh	t gro	mp.							
Height, nearest inch.	Total number of chil- dren.	weight at each height.	10-44	45-49	50-54	55-59	£9-09	69-69	₹2-02	75-79	80-84	85-89	90-94	95-99	100-104	105-109	110-114	115-119	120-124	125-129	130-134	135-139	140-144	145-149	150-154									
All heights.	805	79.7	2	1	8	22	63	110	116	117	92	107	50	44	24	13	13	11	4	3	1	1	1	1	1									
44 45 46 47 48 49	1 1 2	44. 0 56. 0 62. 5	1		1	1			1																									
50 51 52 53 54	9 13 27 40 83	66. 0 62. 6 61. 7 67. 5 69. 0	1	1	1 2 3	2 3 6 4 3	3 8 12 18	1 1 10 11 27	1 1 7 19	1 2 8	1 3 4	2 1 1 4																						
55 56 57 58 59	83 83 95 101 100	71.1 74.5 79.4 82.4 87.0			1	3	11 4 3 3	24 19 8 5 2	24 21 21 16 2	7 22 19 22 21	7 9 18 14 18	6 5 16 16 26	1 1 4 9	2 1 6 13	3 3 2	1 5 2	1 2	1 2		1														
60 61 62 63 64	74 41 29 14 5	89. 5 93. 6 99. 4 100. 2 107. 6					1	1	2	13 2	11 4 1 2	16 7 3 4	10 9 7	6 7 7 1	5 6 2 1 2	1 2 2	3 1 3	3 2 2 1	2 1	1 1	1	1	1	1					•					
65 66 67 68 69	2 1 1	113. 5 120. 0 152. 0															2		1						1									

Constants of height and weight for 12-year-old children.

	Heig	ht (inches).	Weigh	ht (pounds).		Coefficient of	Regres- sion of
Sex.	Mean.	Standard deviation.	Mean.	Standard deviation.	Correlation ratio (η).	correlation (r) .	weight on height.
BoysGirls	56. 2 57. 0	3.03±0.052 3.02±.051	78, 0 79, 7	12.43±0.212 14.85±.250	0.736±0.0111 .719± .0115	0.706±0.0121 .703± .0120	2. 91 3. 44

'IABLE XXIX.—Correlation between heights and weights of native white school children in Maryland, Virginia. North Carolina, and South Carolina.

679 13-YEAR OLD BOYS.

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Ī	n ea	135-139	-			_		
ı	ren i	130-134			-	_		
	hild	125-129	-					
ı	o Jo	120-121	9	1	-			
	Number of children in each 5-pound weight group.	611-911	10	İ				
	Nur	†11-011	12	İ				
		601-201	62	ŀ		1		
		100-101	35	-	-	Ì		
		66-96	47	-	1	İ		
			72 4	L	-	i		
		F6-06		<u> </u>	4	t		
		68-98	116		-	†		
		¥8-08	116		-	ł		
		62-57	113			-		
		F2-02	62			+		
		69-99	83			4		
		¥9 - 09	21			1		
		69-99	က					
		19-09	-		1			
		6F-9F	-					
	Mean	weignt at each height.	85.1	81.0	74.0			
	[3]	hil-	629	-	72	1		
	Tot	number of chil- dren.						
	-	nearest inch.	All neights.	45	89		20	
		neal inc	A			1		

Constants of height and weight for 13-year-old children.

ncnes	Height (inches).	Weigh	Weight (pounds).	oction of	Coefficient of	Regres-
Standard deviation.	ndard iation.	 Mean.	Standard deviation.	ratio (n).	correlation (r) .	weight on height.
2. 93±0. 054 3. 16± . 057	±0.054 ±.057	85.1 89.7	85.1 12.84±0.235 89.7 16.41± .297	0.720±0.0125 .707±.0128	0.687±0.0137 .669± .0141	3.02

Table XXIX.—Correlation between heights and weights of native white school children in Maryland, Virginia, North Carolina, and South Carolina. 079 13-YEAR OLD BOYS.

T				_		-	_	_	=		=	=	=		=	_				_	_							-	_	 	_	_	 _	 -	_	 _
ı		Total	Mean														Nu	mhe	rofe	hildı	en i	n eac			d we	ight	grou	p.								
	Height, nearest inch.	number of chil- dren.	Mean weight at each height.	45-49	50-54	55-59	60-64	69-29	70-74	75-79	80-84	85-89	₹6-06	95-99	100-104	105–109	110-114	115-119	120-124	125-129	130-134	135-139	140-144	145-149	150-154											
	All neights.	679	85.1	1	1	3	21	33	62	113	116	116	72	47	35	29	12	10	6	1		1														
	45 46 47 48 49	1	81.0								1	1																								
	50 51 52 53 54	5 3 11 17 26	77. 0 67. 0 65. 9 67. 4 73. 7		1	1 1	1 2 5 6 3	1 5 7	3 2 5	1 1 1 6	2 3	1	1	1	1																					
	55 56 57 58 59	53 85 101 101 82	74.8 78.4 82.1 84.0 87.4	1		1	3	7 7 4 1	16 19 9 6 1	17 28 24 22 9	5 14 27 28 21	4 9 19 26 24	4 8 7 13	1 1 5 5 7	1 3 3 3	1 2		1 1 2	1	-		٠														
	60 61 62 63 64	73 39 35 26 11	91. 2 94. 8 99. 1 104. 3 101. 2					1	1	1 1	11 3 1	19 4 5 2 1	20 14 3 2	9 4 8 4 2	5 6 9 2 1	3 5 4 9 3	2 1 5 3	2	3			1														
	65 66 67 68 69	6 1 1	113.3 123.0 100.0												1	2	1	2	1	1																
	70	1	115.0															1																		

695 13-YEAR OLD GIRLS.

															00	0 10		AR				··													
Height	Total	Mean														Nu	mbe	rofe	hildı	ren i	n eac	:h 5-j	pour	nd we	eight	groi	ıp.								
Height, nearest incb.	Total number of chil- dren.	Mean weight at each height.	45-49	50-54	5559	\$9-09	62-69	70-74	75-79	80-84	85-89	90-94	95-99	100-104	105-109	110-114	115-119	120-124	125-129	130-134	135-139	140-144	145-149	150-154											
All heights.	695	89.7	1	3	7	24	27	44	85	88	85	73	86	57	40	20	18	17	6	6	4	1	2	1						1		1			
45 46 47 48 49																															i				
50 51 52 53 54	10 10 25	86. 5 63. 0 66. 4 74. 8 69. 4	1	2	1 3 2	4 1 9	1 1 1 9	1	1 1 2	2	1		1 1 1	2				1	1																
55 56 57 58 59	35 39 64 68 85	70. 5 76. 3 81. 4 83. 9 86. 9		1	1	8 1	3 2	10 9 9 8 4	9 11 19 15 11	1 6 16 14 18	1 4 5 13 17	1 6 7 14	2 3 13	2 4 7	1 1	1 1		1																	
60 61 62 63 64	86 106 58 45 28	92. 0 96. 5 100. 4 104. 4 105. 6					1	1	10 4 1 1	13 14 3	20 11 9 3 1	11 16 8 4 3	12 21 15 11 4	6 18 5 4 7	5 12 4 8 4	2 3 4 6 1	1 3 4 5 1	2 1 2 4	1 2	1 1 1	1 1 1	1	1	1											
65 66 67 68 69	18 7 2 1 2	113. 8 115. 7 125. 0 74. 0	1									2	1	1	4	2	2 2	3 2 1	1	1 1 1			1												
68 69	1 2	74. 0 95. 0						1				1		1																					
70																																			
							-																												

Constants of height and weight for 13-year-old children.

	Heig	ht (inches).	Weigh	at (pounds).	0	Coefficient of	Regres- sion of
Sex.	Mean.	Standard deviation.	Mean.	Standard deviation.	Correlation ratio (η).	correlation (r).	weight on height.
Boys	58. 0 59. 3	2.93±0.054 3.16±.057	85. 1 89. 7	12.84±0.235 16.41±.297	0.720±0.0125 .707± .0128	0.687±0.0137 .669± .0141	3. 02 3. 48

TABLE XXX.—Correlation between heights and weights of native white school children in Maryland, Virginia, North Carolina, and South Carolina.

BOYS.
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		İ			
	691-991			-	
	191-091	Ĭ			
	155-159				
p.	120-124				_
grou	6+1-5+1	4			
ight	140-144	9		-	-
l we	135-139	63			
Number of children in each 5-pound weight group.	130-134	9		7 1 7	E
1 5-p	125-129	41	-	→ ~ ∞	
each	120-124	15		 	12:15
n in	611-611	13		108401-	2-1-1-2-
ildre	\$11-011	28		10 44 10 00 00	5 63
of ch	601-901	- 68	9	5116	∞
ber	100-101	47	62	8 4 1 1 8 1 1 8 1 1 8 1 1 8 1 1 8 1 1 1 1	20 CM
Zum		52	410	174 118 12 19	₩ ==
	66-96	57 5	26	7227	
	¥6-06	90 2	400	13 13 1	
	68-98		2	1 2 1	
	¥8-08	35.		40	
	62-92	88	-100		1
	₹2-02	123	0000	67	
	69-99	5 12	-		
	₹9-09		-		
	62-53		-	1	•
	\$9-0g				`
	61-51				
	₹₹-0₹	- :			
	66-36	-			
	30-34	-			
Mean	weight at each height.	95.4	86.7 90.6	96. 5 97. 3 102. 4 107. 4 112. 7	110.4 117.6 113.4 115.0 127.0
Total	number of chil- dren.	471	32	77 71 79 68 68 51	11 22 11 13
-	Height, nearest mch.	All heights.	25 52	625.50	66 66 67 70 71 72

Constants of height and weight for 14-year-old children.

Regr	weig on heigh	
Coefficient of	correlation (r) .	0.795±0.0114 .643± .0172
Correlation	ratio (n).	0.816±0.0104 .692±.0153
Weight (pounds).	Standard deviation.	95. 4 17. 52 ± 0. 385 99. 4 14. 75 ± . 306
Weigh	Mean.	95. 4 99. 4
Height (inches).	Standard deviation.	3.83±0.084 2.99±.062
Heigh	Mean.	60.3
	Sex.	Boys. Girls.

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																47	1 14	-YE	AK	OLI	ЭВ	OYS																
Ī	Maight	Total	Mean														Nu	mhe	r of	child	ren i	n ea	eh 5-	рош	nd w	eigh	t gro	up.										
	Height, nearest inch.	Total number of chil- dren.	weight at each height.	30-34	35-39	40-44	45-49	50-54	55-59	60-64	62-69	70-74	75-79	80-84	82-89	90-94	66-56	100-104	105-109	110-114	115-119	120-124	125-129	130-134	135-139	140-144	145–149	150-154	155-159	160-164	165-169							
	All heights.	471	95. 4	1	1					5	12	22	33	55	60	57	52	47	29	28	22	15	14	6	2	6	4											
	36 37 38 39	1	39. 0 34. 0	1	1																																	
	40 41 42 43 44																																					
	45 46 47 48 49	1	73.0									1																										
	50 51 52 53 54	4 4 9	69. 3 68. 5 67. 0							1 1 2	1 1 5	1 2 2	1																									
	55 56 57 58 59	14 23 37 60 47	77. 2 80. 4 83. 4 84. 7 89. 7							1	1	4 4 5 2	4 4 7 12 2	1 8 11 14 10	1 5 10 16 13	1 1 9 10	1 1 4 6	1 1 2		1 1 1	1	1	1															
	60 61 62 63 64	55 46 45 38 26	92, 6 97, 3 103, 5 107, 9 106, 3									1	1	7 3 1	8 3 2 1 1	16 10 8 2	9 10 10 6 3	9 10 7 9 7	2 5 6 6 5	2 2 5 7	2 3 3 2	1 2 1 1	3 3		1	1	1					K						
	65 66 67 68 69 70 71	20 20 7 8 9 1 1 1	124. 0 143. 0								1						1	1	5	3 2	4 5 1 1	2 3 3 1	3 1 1 2	1 3 1	1	1 1 1	1 1					0						
				١.,	1	1	1			1	_		1	-		1	1	1								-		1	1	1		<u> </u>	1	-	_		 	

528 14-YEAR OLD GIRLS.

Height	Total	Mean														Nu	mhe	r of c	hildı	ren i	n eac	h 5-p	oun	d we	eight	groi	ıp.										
Height, nearest inch.	Total number of chil- dren.	Mean weight at each height.	30-34	25-39	40-14	45-49	50-54	55-59	60-64	62-69	70-74	75-79	80-84	82-89	90-94	95-99	100-104	105-109	110-114	115-119	120-124	125-129	130-134	135-139	140-144	145-149	150-154	155-159	166-164	165-169							The same of the sa
All heights.	528	99.4						1	3	4	18	25	39	60	45	86	72	47	39	36	20	11	8	3	2	2	3		3	ì							
36 37 38 39	1	90. 0													1																						
40 41 42 43 44																																					
45 46 47 48 49	1	56.0						1																							, ,						
50 51 52 53 54	1 1 5	85, 0 60, 0 71, 4							1	1	2			1																							
55	11	74.1							1	1	4	3	1 3	_	1	1	1		1							П											
55 56 57 58 50	11 18 32 50	85, 5 84, 6 86, 7 90, 6					-			1	3 3 3	3 3 3 7	3 2 7 6	1 4 8 7	1 2 9	1 1 4 5	1 2 6	6	1 1 1		-	1			=	=	-	-	-Cia			-					
60 61 62 63 64	77 71 79 68 51	96. 5 97. 3 102, 4 107. 4 112, 7									2	4 2	7 6 5 1	13 7 13 3 1	10 12 2 7	17 14 18 12 9	8 14 16 8 9	5 5 6 11 5	5 4 5 8 8	5 3 4 9 7	1 3 3 4	1 3	1 1 2	1 1 1 1	1	1	1		1	1			-	_		Ī	
65 66 67 68 69 70 71 72	31 13 5 1	110. 4 117. 6 113. 4 115. 0 127. 0								0			1	1		4 1	3 2 2 2	8	3 2	5 1 1 1 1	2 5 1	1	3 1		1		1					1		1		1	

Constants of height and weight for 14-year-old children.

	Heig	ht (inches).	Weigl	nt (pounds).	Correlation	Coefficient of	Regres-
Sex.	Mean.	Standard deviation.	Mean.	Standard deviation.	ratio (7).	correlation (r).	weight on height.
Boys. Girls	60, 3 61, 1	3, 83±0, 084 2, 99± , 062	95. 4 99. 4	17.52±0.385 14.75± .306	0.816±0.0104 .692± .0153	0.795±0.0114 .643± .0172	3, 66 3, 16



TABLE XXXI.—Correlation between heights and weights of native white school children in Maryland, Virginia, North Carolina, and South Carolina.

278 15-YEAR OLD BOYS.

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			-	_			
			-				
				_			
	671-371			_			
	170-174						
	691-991						
.dr	160-164						
втоп	691-991	-					
ight	120-154	7.0					
Number of children in each 5-pound weight group.	6+1-9+1	00					
onn	140-144	6					
ф-9-р	135-139	00					
eacl	130-134	41		c	2	1	
n in	125-129	16		c	2-2-0	İ	
ildre	120-124	22	-	0	201	Ï	
of ch		22		Ī;	1-2		
per (611-611			1	2000	T	
Inm	110-111	21		ļ.,	-0101	╁	
4	601-201	35		L	01 00	+	
	₹01-001	25		1	21-	t	-
	66-96	26		1		+	
	₹6-06	16				-	
	68-58	15		ŀ		-	
	₹8-08	13		1			
	64-37	=		1			
	₹2-04	5		1			
	69-99	က					
	₹9-09	-		1			
	69-99	-		1		1	
	PG-05						
	61-21						
	††-0†	-	-			-	
- H	it chit	108.4	0 04		115.7 114.5 124.3 135.0	0.0	0.66
Mes	weight at each height.	100	Ť	1		1	
		278	-		13	1	-
Tota	number of chil- dren.	23					
		, s	2	1 7	586588	3	7312
	neaght, nearest inch.	All heights.		1			
1 5	1 1	þe				-	

Constants of height and weight for 15-year-old children.

Regres-	height.	4.46	
Coefficient of	correlation (r).	0.842±0.0118 .427±.0303	
Correlation	ratio (η).	0.853±0.0110 .543±.0262	
Weight (pounds).	Standard deviation.	108.4 20.46±0.585 107.6 16.38± .429	
Weigh	Mean.	108, 4 107, 6	
Height (inches).	Standard deviation.	3.85±0.110 2.62±.069	
Heigh	Mean.	62.9	
	Sex.	Boys.	

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TABLE XXXI.—Correlation between heights and weights of native white school children in Maryland, Virginia, North Carolina, and South Carolina. 278 15-YEAR OLD BOYS.

					-			_			-	_		_		Nu	mbe	r of e	child	ren	in ea	ch 5-	pon	nd w	eigh	t gro	up.		_	-	 	 				_	
Height, nearest inch.	Total number of chil- dren.	Mean weight at each height.	40-44	45-19	50-54	55-59	60-64	62-69	70-74	15-79	80-84	85-89	50-94	95-99	100-104	105-109	110-114	115-119	120-124	125-129	130-134	135-139	140-144	145-149	150-154	155-159	160-164	165-169	170-174	175-179			T	i	-		
All heights.	278	108. 4	1			1	1	3	5	11	13	15	16	26	25	35	21	22	22	16	14	8	9	8	5	1											
42 43 44 45 46 47 48 49	1	42.0	1																																		
50 51 52 53 54	1 2	55. 0 66. 0				1	1		1																												
55 56 57 58 59	4 10 6 8 12	70, 5 79, 6 80, 0 80, 4 89, 7						1	1 2	1 4 1 3 2	3 2 2 1	2 1 2	1 1 3	3		1																		Ì			
60 61 62 63 64	24 30 26 25 30	95. 5 99. 7 106. 5 105. 8 112. 8									3 2	3 5 1 1	3 4 3 1	10 5 2 4 1	2 5 5 7 2	2 5 7 5 9	1 2 3 1 5	4 4 5	1 1 2 5	1	1			1	1												
65 66 67 68 69	31 20 20 15 6	119. 7 124. 4 129. 4 133. 0 130. 3												1	2 1 1	3 2	6 1 2	4 3 2	5 3 2 1 1	3 4 5	2 3 3 3 1	3 1 3 1	1 2 2 1 1	1 1 1 2 1	3												
70 71 72	5 2	138. 2 148. 0				1													1		1		1	1	1	1											

	200								-						33	1 15-	YE	AR	OLE	GI	RLS	s.														
Taraba	Total	Mean														Νυ	mhe	er of	child	lren	in ca	sch 5-	pou	nd w	eigh	t gro	up.									
Height, nearest inch.	Total number of chil- dren.	weight at each height.	40-44	45-49	50-54	55-59	\$9 - 09	69-59	70-74	75-79	80-84	82-89	\$6 - 06	66-56	100-104	105-109	110-114	115-119	120-124	125-129	130-134	135-139	140-144	145-149	150-154	155-159	160-164	165–169	170-174	175-179						
All heights.	331	107. 6							1	5	14	22	22	40	48	39	38	83	20	20	11	6	3	3	2	1	1	1		1						
42 43 44 45 46 47 48 49																																				
50 51 52 53 54	1	157. 0																								1										
55 56 57 58 59	3 3 4 10 17	101. 7 85. 7 95. 0 90. 6 92. 9							1	1 1 1	3 3	1 1 5	2	3 1 2	3 4	1	1	1																		
60 61 62 63 64	33 35 59 53 45	101. 6 99. 9 107. 6 107. 1 113. 6								2	4 2 1 1	5 5 2 1	3 2 5 7 1	11 10 5	5 3 10 9	1 4 9 8 9	2 5 9 8 4	1 1 2 7 7	2 1 6 1 4	1 1 2 6	1 3 2	1 1 1 1 1	1 1 1	1				1		1	-				-	
65 66 67 68 69	31 17 13 4 2	115. 7 114. 5 124. 3 135. 0 125. 0										1	1	2	3	1 2 2	3 2 1	11 1 2	3 2 1	3 1 3 1 2	3 1 1	1		1 1	1		1									
70 71 72	1	99. 0												1 /								į														

Constants of height and weight for 15-year-old children.

	Heig	ht (inches).	Weigl	nt (pounds).		Coefficient of	Regres-
Sex.	Mean.	Standard deviation.	Mean.	Standard deviation.	Correlation ratio (7).	correlation (r).	weight on height.
Boys	62. 9 62. 5	3.85±0.110 2.62± .069	108. 4 107. 6	20, 46±0, 585 16, 38± , 429	0.853±0.0110 .543± .0262	0.842±0.0118 .427± .0303	4. 46 2. 69

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TABLE XXXII.—Correlation between heights and weights of native white school children in Maryland, Virginia, North Carolina, and South Carolina.

161 16-YEAR OLD BOYS.

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	661-961		Ì		
ľ	F61-061				
	681-981		İ		
ļ	180-184	-	Ti		
	621-921		T		
	\$21-021				
ıp.	691-391				
grot	191-091				
eight	691-991				
Number of children in each 5-pound weight group.	150-154	-	1		
mod-	6+1-9+1	-			
ch 5	140-144	9			
in ea	135-139	91			
lren	130-131	91			
chile	125-129	- 22		1	
er of	120-124	-21			
quun	611-311	- 2			ļ
Z	110-114	4			
	601-301	16			
	100-101	16			
	66-96	-	_		
	16-06	, C			
	68-38	5.0			
	18-08	4			
	6L-2T	-			
	F2-02				
	69-99	-			<u> </u>
	£9-09				<u> </u>
	69-99				
	19-09			·	
	61-91				
Mean	weight at each height.	116.7		·	
Total	number of chil- dren.	191			
	Height, nearest inch.	All heights.	47	77 72 72	

Constants of height and weight for 16-year-old children.

Regres- sion of	weight on heigh	4.6.
Coefficient of	correlation (r).	0.736±0.0244 .565±.0310
Correlation	ratio (n).	0.784±0.0205 .592±.0296
Weight (pounds).	Standard deviation.	116. 7 17. 12±0. 644 113. 6 16. 24± . 523
Weigh	Mean.	116.7
Height (inches).	Standard deviation.	2.99±0.112 2.50±.081
Heig	Mean.	64.6
	Sex.	Boys. Girls.

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TABLE XXXII.—Correlation between heights and weights of native white school children in Maryland, Virginia, North Carolina, and South Carolina. 161 16-YEAR OLD BOYS.

Height.	Total	Mean														Nu	ımhe	er of	child	iren	in es	ch 5	-pou	nd w	eigh	t gro	up.		_	_				 	 _		7
Height, nearest inch.	Total number of chil- dren.	weight at each height.	45-49	50-54	55-59	60-64	69-59	70-74	75-79	80-8	85-89	90-94	95-99	100-104	105-109	110-114	115-119	120-124	125-129	130-131	135-139	140-144	145-149	150-154	155-159	160-164	165–169	170-174	175-179	180-184	185-189	190-194	195-199				
All heights.	161	116.7					1		1	4	. 5	5	7	16	16	14	21	12	18	16	16	6	1	1						1							
47 48 49 50 51 52 53 54																																					
55 56 57 59 59	1 5 1	103, 0 79, 6 83, 0 85, 6					1		1	2	1 1		1	1																							
60 61 62 63 64	9 11 8 12 22	103. 2 98. 6 104. 9 104. 8 116. 9								1	1 1 1	2 1 1 1	4	1 5 3 2 3	2 1 2 3	3 2	1 2 6	1	1 1 1	2	2	1															
65 66 67 68 69	26 18 18 19 7	117, 0 124, 3 123, 6 137, 2 131, 1											1	1	6 1 1	5 2	5 2 5	2 3 2 3	5 5 3 1	1 2 3 4 3	1 3 3 5 1	4	1	1						1							
70 71 72	1	138. 0 136. 0																		1	1	1															

219 16-YEAR OLD GIRLS.

															-					4.																 	
Haight	Total	Mean														Nu	mbe	rofo	hild	ren i	n ea	h 5-1	poun	d we	eight	grou	ıp.										
Height, nearest inch.	Total number of chil- dren.	Mean weight at each height.	45-49	50-54	55-59	60-64	62-69	10-74	75-79	80-84	82-89	90-94	95-99	100-104	105-109	110-114	115-119	120-124	125-129	130-134	135-139	140-144	145–149	150-154	155-159	160-164	165-169	170-174	175-179	180-184	185-189	190-194	195-199				
All heights.	219	113.6	1						1	2	6	7	15	24	35	35	27	19	22	10	5	1	1	2	2	1	1				1		1				
47 48 49 50 51 52 53 54	1	45.0	1																																		
55 56 57 58 59	1 1 1 6	77. 0 88. 0 82. 0 97. 8							1.	1	1 2		2		1	1																					
66 61 62 63 64	18 12 37 40 33	104, 4 102, 0 113, 3 111, 6 113, 6								1	1 2	1 2 1 3	3 4 2 3	3 2 6 6 4	5 4 1 10 6	1 1 9 6 6	1 8 3 5	1 1 1 3 2	1 3 1 4	1 4 2	2 2		1	1													
65 66 67 68 69	35 17 9 8	118. 6 125. 0 126. 6 133. 4											1	1 2	4 3 1	9 1 1	6 4	5 3 2 1	6 5 2	1 1 1	1	-1		1	1	1	1				1		1				
70 71 72																			-																		

Constants of height and weight for 16-year-old children.

	Heigi	ht (inches).	Weigl	ht (pounds).	Correlation	Coefficient of	Regres- sion of
Sex.	Mean.	Standard deviation.	Mean.	correlation (r).	weight on heigh		
BoysGirls	64. 6 63. 3	2.99±0.112 2.50±.081	116. 7 113. 6	17.12±0.644 16.24± .523	0.784±0.0205 .592± .0296	0.736±0.0244 .565± .0310	4, 24 3, 70

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